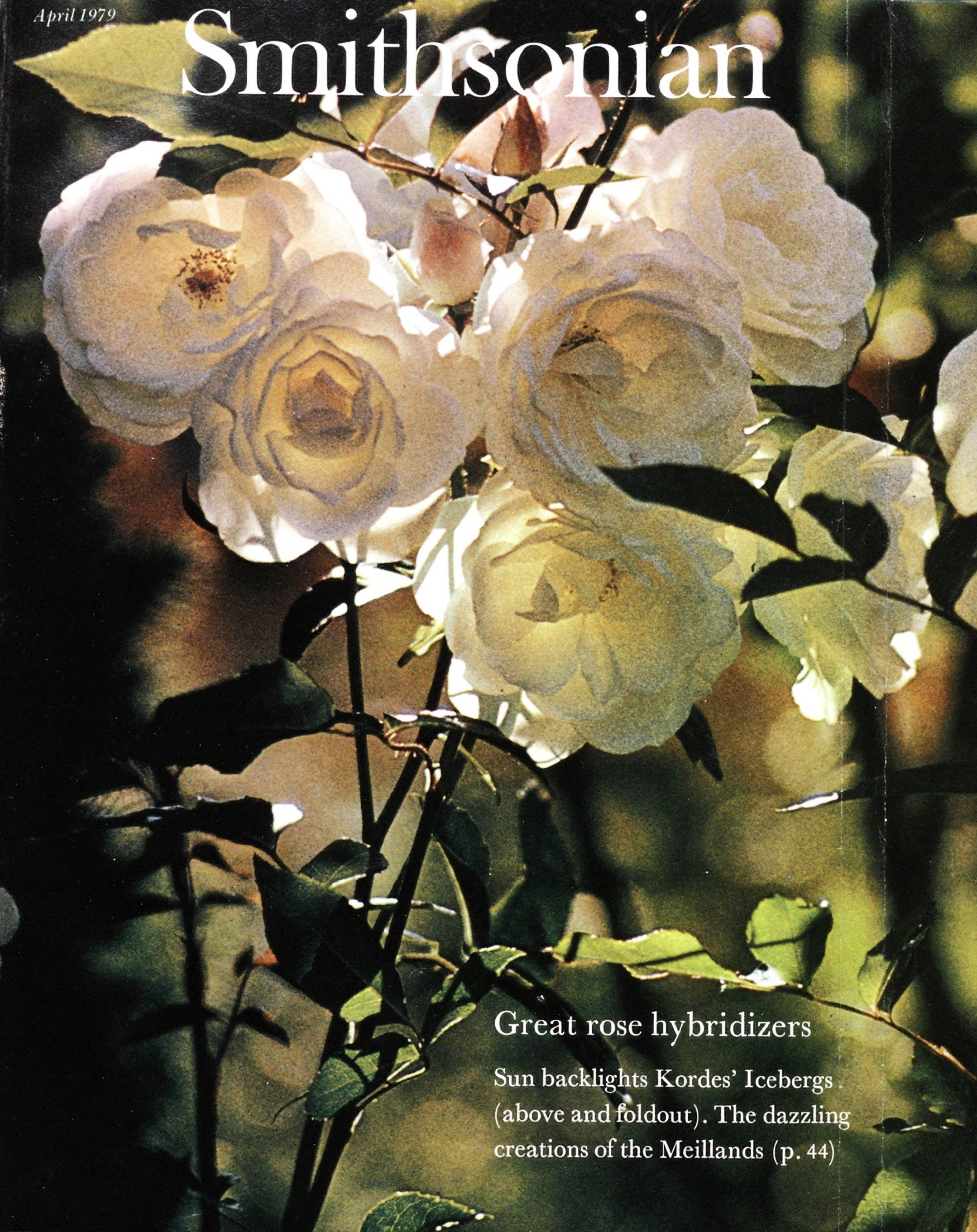
April 1979

Smithsonian



Great rose hybridizers

Sun backlights Kordes' Icebergs (above and foldout). The dazzling creations of the Meillands (p. 44)

In 1953 they used Rolex Oyst
In 1978 they managed

In 1953, the man on the left of our picture became the first person to set foot on the top of Everest.

His name: Sir Edmund Hillary.

Together with Sherpa Tensing, he made the final victorious assault on the world's highest mountain.

To have battled that far against the cold, altitude and sudden dramatic shifts in weather unique to Everest was achievement enough. But when you realise that each member of the team carried up to 50 lbs. of equipment, it becomes not so much a feat of skill as one of endurance.

1953 Rolex Oyster

For example, each oxygen pack–at that time considered essential for climbers at that altitude–weighed 20 lbs.

One item which weighed rather less was the Rolex watch with which each member was equipped.

Lord Hunt, leader of the historic British expedition, wrote afterwards: "We have indeed come to look upon Rolex Oysters as an essential part of our high-climbing equipment."

Exactly 25 years later, the Italian Reinhold Messner, on the right of our picture, climbed Everest by the same route (including a section called The Hillary Step).

But what singled out his achievement from all the successful Everest expeditions since 1953 was that it was performed without the use of oxygen.

If there was any doubt before (and there was little among the mountaineering fraternity) this climb ranks Messner as one of the world's greatest living climbers.

ters and oxygen on Everest without the oxygen.

He has now become the first man to make five ascents over 8,000 metres, all without the aid of oxygen.

In many ways, the equipment and techniques used by modern-day mountaineers have changed dramatically since the days of Hillary and Hunt.

And it is only the speed of the climber, the lig construction of his clothing and gear, together wi a degree of fitness–comparable to that of a top athlete–which enables him to withstand the effects of altitude sickness.

And Messner's choice of a Rolex was typical of his obsessional attention to detail so critical to such a climb.

His Rolex Oysterquartz functioned perfectly throughout the expedition.

It was entirely appropriate that the firs person to greet Messner and his partner Pet Habeler on their return to base camp was non other than Sir Edmund Hillary.

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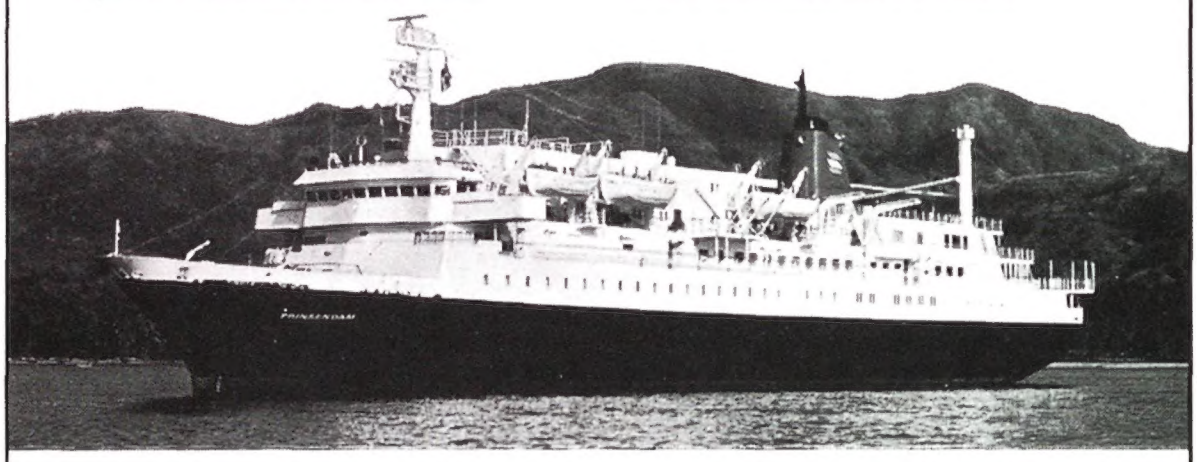

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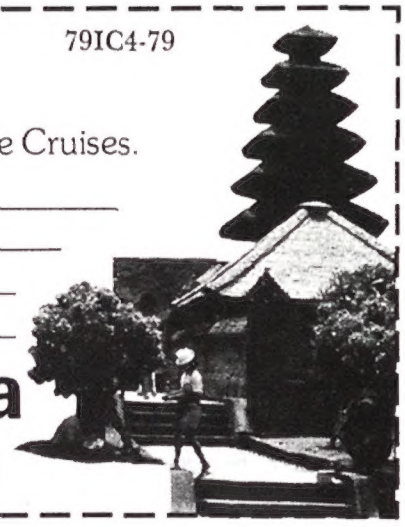

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Secretary Ripley's comments

The view from the castle

As SMITHSONIAN *magazine enters its tenth year, it is part of the 'outreach' through which we are all able to share the Institution's treasures*

One of the most normal of reactions to the fascination of the Smithsonian's exhibits is the plea, "Can't you get your message out to the country? Why should Washington be privileged to harbor all these wonderful things? How can you be so selfish?"

Our museums are indeed fascinating and the wealth of exhibits is sometimes overwhelming. It is also true that we have the largest attendance in the world, with some two million visits a month to buildings around the Mall and elsewhere in Washington. If the Institution were to respond by putting up buildings in every state of the Union, we would probably still not satisfy the demand.

Instead of thinking in such static and costly terms, we devised a different plan. We started the Resident Associates in 1965, on the 200th anniversary of the birth of James Smithson, who had the idea for the Institution. The Associates were such a success locally that our Regents felt we could "go national." Thomas Watson, one of the Regents, became the first chairman of the National Associates in 1970. Our fourth chairman is William S. Anderson of Dayton.

From the first regional meeting in Houston in 1974, when some 3,000 members came to a two-day rally of lectures, exhibitions and seminars, the National Associates local programs now reach seven cities a year and include lectures, workshops, musical events, exhibitions and demonstrations. And what is more heartening still, these events are planned in concert with universities, museums, zoos, galleries, science organizations and historical societies all across this country.

This may be described as "outreach." Our books, regional programs and shops reach a million people annually. Binding us together is the National Associates' magazine, SMITHSONIAN, which with this issue enters its tenth year with a readership of more than 1.6 million families. It was conceived to record notable events at the Institution, as well as to present the kind of subjects the Smithsonian is interested in the world over: science, history and the arts—fine and folk.

Thus, for this month, Edwards Park's *Around the Mall* gives the Smithsonian-eye view of the Vice Premier of China, juxtaposed against a view of the ancient caves of Yün-kang (p. 54). Our National Portrait Gallery is completing a microfiche of the remarkable Charles Willson Peale family, supplemented by the article on p. 66. Washington is not on the Atlantic, but the scientists of our Oceanographic Sorting Center can participate vicariously in a Woods Hole expedition to the stormy North Sea (p. 80). The migration of art from its traditional centers is reflected in the Western States Biennial exhibition (p. 114). SMITHSONIAN readers can share in the drama of aerial photography in our National Air and Space Museum's new display (p. 106). And winter-weary flower lovers, along with the rest of us, will welcome the dazzling products of the great rose hybridizers (cover and p. 44).

We feel that we are knitting together a countrywide community of people who want a sense of owning the Smithsonian Institution, which they do. It is a way to validate our life, our aspirations for our nation and our common heritage. For all this we are grateful, proud that a job is being done, and a bit humble!

S. Dillon Ripley

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Around the Mall and beyond

Every other reporter in the vicinity has written all there is to write about the visit, in deepest winter, of the Vice Premier of China, Teng Hsiao-ping (now spelled, according to China's new system of transliteration, Deng Xiaoping) and his wife, Madame Cho Lin (now spelled Zhuo Lin). But I haven't. They came to the Smithsonian, too, and I saw them and I want to write about it. I don't care if it *is* a bit late. I want to.

First about Madame Zhuo (no matter how you spell her, you pronounce her pretty close to "Joe"): in China, wives tend to stay in the wings, but in Washington, Madame Zhuo became a happy rubberneck and an effective politician.

She went to the Freer Gallery of Art to see the Oriental art collections and all that. She was due early, so I arrived at dawn's crack with a White House staffer who, I gather, was casing the joint. We found our way through the empty corridors to Gallery XVIII where the action was supposed to reach a wild crescendo as Madame was shown a big bronze ceremonial bell, type *chung*, dating from the fifth century B.C.

I noted the details: a fine, big, heavy, much-adorned bell without a clapper. You hung it from bronze loops formed by two birds of intricate design. Then I guess you bonged it from the outside with some sort of bonger, like the way those old J. Arthur Rank movies used to start out.

Photographers and TV crews started taking up positions in their roped-off preserves. Time dragged on. I walked down a corridor to look at a Sakyamuni Buddha of the T'ang Dynasty which was sitting alone under a spotlight watching the

Hsing-Hsing chomps bamboo for VIP audience, Madame Zhuo, Amy and Mrs. Car

Since you have to pay the penalty for being in your bracket, you might as well get some of the rewards.

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AIR CANADA

SM 4-79

Dr. Lawton conducts Freer tour.

gathering of the press. The dynasty's da are seventh to eighth century, whi makes this lacquer Buddha a couple hundred years later than those we d scribe on pp. 54-63 of this issue, but noticed that the sculpture—layers of si or hemp soaked in lacquer—had the sle look of what Lucy Lim in her article ca the Chinese style.

I abruptly recalled that I was to witn a little modern Chinese style any minu now, and I hastened back toward t press enclosure. A hush had fallen o the group, and my right shoe squeak audibly on the polished floor.

Suddenly there was a stir at the M entrance, and the party arrived: Secreta Ripley, Thomas Lawton, director of t Freer, a number of other dignitaries, pu lic affairs people, Secret Service peop interpreters, Chinese press, coordinato assistants and Madame Zhuo hers short and smiling.

She looked at all the things she w supposed to and seemed more or less i pressed with the bell. Dr. Lawton, w speaks Chinese fluently, explained thi to her. He told me later that she stru him as warm and genuine, asked sensi questions, expressed an interest in C nese archaeology and admired the con tion of our older displays.

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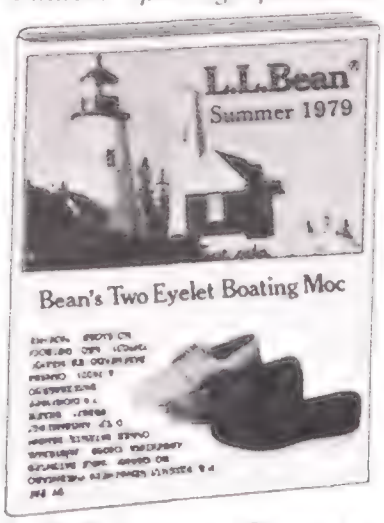

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Technology. I avoided the press pens there and instead, hung about the place called HAME—Hall of American Maritime Enterprise (SMITHSONIAN, November 1978)—because there is a nice little display of things from the old American China Trade days of more than a century ago. To be seen are chinaware and figurines, a tea chest and carved ivory.

My favorite is a small ivory ball, intricately carved, and inside more than a dozen other balls, all concentric with one another and thus diminishing in size, and all similarly carved and all magically free to move, each on its own. I remember seeing one when I was a boy in an old town house with blue glass in the bay windows in Boston's Back Bay. I suppose some mercantile Yankee of the 1850s had picked it up in China. I wondered then how in the world such a thing could be carved from a single block of ivory, and I wonder the same thing today, though I am quite possibly the only person in the world who is innocently unaware that it's all some sort of trick.

Anyway, I wanted Madame Zhuo to see these displays, and especially my globe, and express recognition, delight, dismay, amusement, anything. But she was pretty tired by the time she got there and only reacted with her usual politeness.

Cute little girl goes limp

Then she saw a group of very young children seated on the floor in the hope that they would be out of the way. They were from a mother's-day-out program, this one run by a Baptist church in Alexandria, Virginia. Madame is a good politician. She reacted like a Boston alderman. She reached for a cute little girl, pinched her on the cheek and tried to lift her up. Trouble was, the cute little girl didn't want to be lifted up, and like CLGs everywhere she went limp. All CLGs know that if they go limp it's almost impossible to pick them up.

Madame was committed, however, and, with the honor of the People's Republic at stake, she kept trying. Up came CLG's puffy pink parka and out popped her shirttails, and Madame found herself attempting to get a grip on an unwilling little naked torso, slippery as a peeled banana with a belly button.

One of the supervisors came to the rescue. "Try Amy," and the interpreter passed it on, and Madame gratefully set

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Another Amy was with Madame Zhuo when she went to see the pandas at the National Zoo. Amy Carter came along with her mother and their guest, past a long line of cameras manned by blue-faced, shivering photographers and television crews, for it was a cruelly cold afternoon.

It was so cold, in fact, that while waiting for the visitors to arrive I went into the nearby Elephant House to warm up and to see how my little friend Shanthi was making out. Shanthi is a three-year-old Asian elephant with a piebald trunk whom the zoo adopted when she was one. She shares an apartment with a full-grown foster sister, Ambika.

While I was talking at them, a keeper came in with that short-handled crook that is used on elephants in training them. Kipling describes it as an "ankus." "Come on, girls," he said, and tapped their trunks, and Ambika and Shanthi curled their trunks over their foreheads and lifted their left forefeet in salute.

I looked at my watch and decided, reluctantly, to get back behind the press ropes at the rear of the panda house, for these visiting Chinese were notoriously punctual. I rejoined the media, huddled miserably on their hastily built wooden

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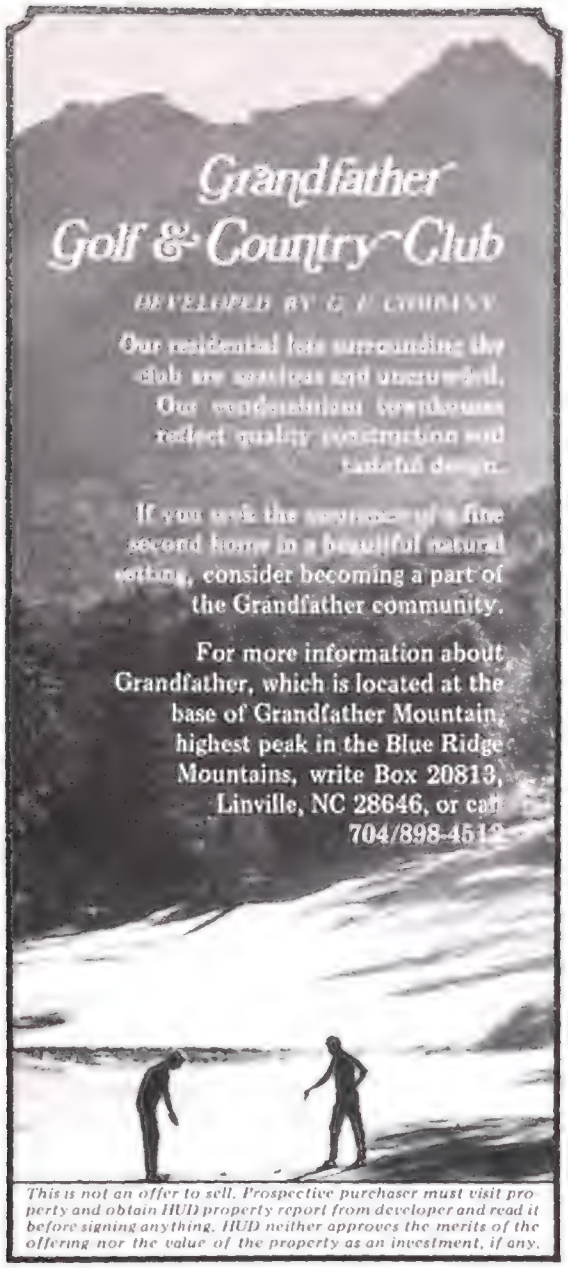
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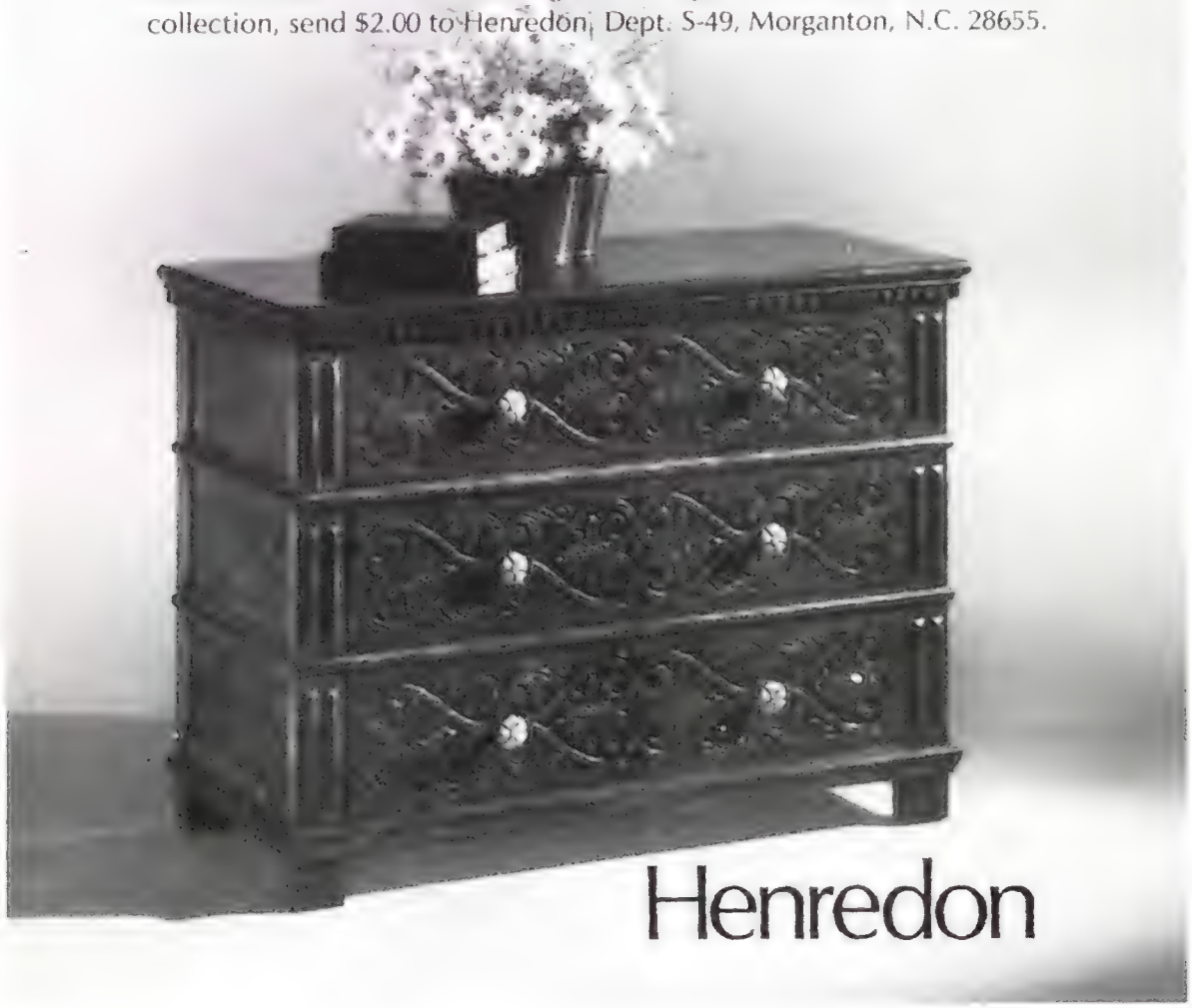

platform, and, sure enough, there was a flashing of red lights and a stream of cars came to a halt a short distance away. In a moment, Madame Zhuo and Mrs. Carter and Amy Carter and a host of the usual greeters, arrangers, recorders and protectors paraded to the fence overlooking the pandas' area, the door to their house opened magically and out they came, each into his or her private yard, for pandas are solitary animals and are kept apart unless the zoo tries breeding.

Ling-Ling, the female, stayed away from the crowd. Hsing-Hsing was enormously hungry. He made a beeline for the row of bamboo that had been stuck in the ground for him, right in front of the visitors, and he sat down to dinner with the aplomb of a hungry executive (p. 8), quite indifferent to the dignitaries and press.

The crowd moved out. I looked back at the elephant yard and there stood Shanthi and Ambika, watching the proceedings with their keeper between them. If the dignitaries had as much as glanced in that direction, I know that those trunks would have curled and those feet would have lifted in salute. But no one looked.

Vice Premier visits Air and Space

Vice Premier Deng visited the National Air and Space Museum in the midst of a cyclone of whirling security measures. The camera tripods were aligned in their enclosures like the guns at Gettysburg, hub to hub. Secret Service people with discreet transmitters and receivers paced outside the pens like the guards at a World War II stalag. Police formed ranks outside the building.

Anyway, the visit was perfectly healthy for everyone and Mel Zisfein of the top museum staff told me that the Vice Premier seemed most interested in the new gallery on Exploring the Planets and smiled affectionately at the DC-3 in the Hall of Air Transportation. "There were plenty of them in China," Mel said.

My two days of rubbernecking left me with a number of fleeting impressions. There was a K-9 dog, a handsome half-breed, sniffing for explosives under the gallery benches at Air and Space. "Go on, get to work," the police handler would say, and the dog would wag his tail happily and sniff for a moment and then look up at the cop interestedly to see what other neat little jobs there might be in

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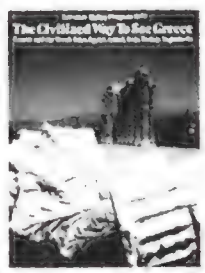

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store for him. There was the press clamoring for the Vice Premier to look down from the entrance to Skylab, and a writer saying to me, "Just like the old days: 'Hey, King! Move to the right, willya?' "

There were other brief items: the Chinese press in black shoes and Nanking haircuts. You haven't seen haircuts like that since 1946. The lady interpreter who looked like "Honey," that character in Garry Trudeau's comic strip, *Doonesbury*. The French TV cameraman who looked like a bouncer in a Marseilles bar. Mrs. Carter moving behind Amy, who was clinging to the panda fence, and snuggling against her to keep her warm—a touchingly unconscious habit of motherhood amid all the hoopla.

Finally, when mingling with the Washington press corps, the proper way to behave is to snarl a lot about what rotten luck it is for you to get hooked with this lousy assignment. Even though, deep down, you're loving every minute of it.

—Edwards Park

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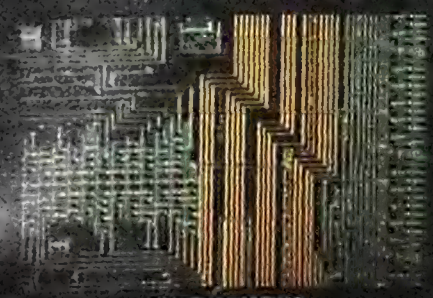

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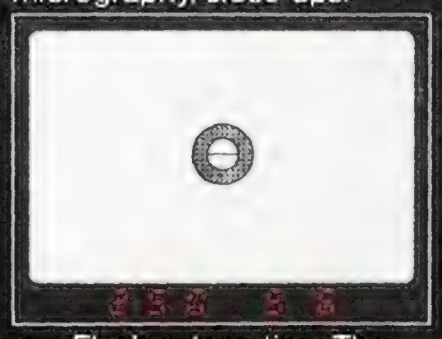

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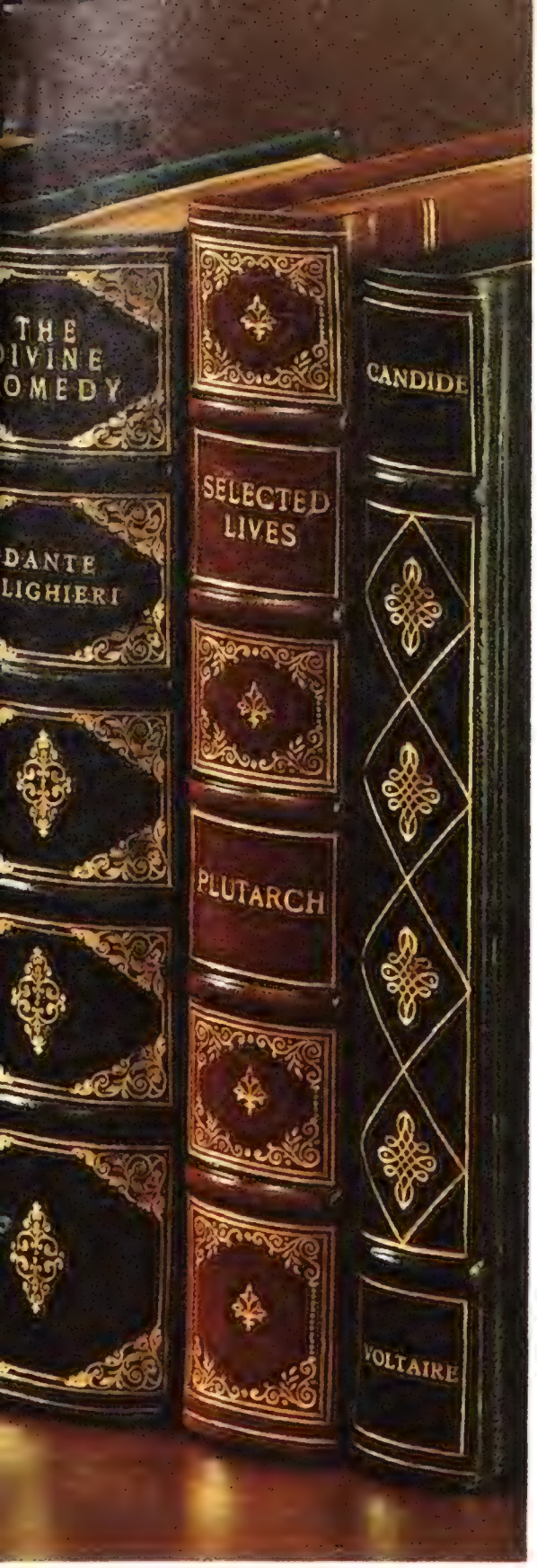

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Letters to the Editor

Stereographs

Dear Sir: I didn't think I would get past your February cover of a stereograph of a "golfer gone berserk." I have spent years clipping golf jokes and comics for a scrapbook I am keeping of my husband's golf career. Your cover is, by far, the one that best sums up, in my mind, the things a golfer's wife has to put up with.
Cynthia Chapin
Greenwich, Connecticut

Dear Sir: There is an excess of the zany in the world without your contribution.
Kathleen M. Munn
Vienna, Virginia

Dear Sir: It must be a TIC (Tongue in Cheek), but I will play the straight man. Is your caption writer for the picture on p. 88 simply bewitched by stereography, or is he devoid of the powers of deduction and a basic acquaintance with Freud and Masters and Johnson? How could he mundanely caption the picture, "Father seems so interested in the stereograph that he apparently doesn't notice son's departure"? The picture pulsates with the thriller-snicker, "stereograph salesman engages winsome wife while product engages interested husband."
Harry F. Dietrich, M.D.
Westlake Village, California
SMITHSONIAN*'s copy of the photo was simply captioned "comic," and our interpretation of what it seemed was naive. Surely, we thought, the purveyors of wholesome entertainment for the home must be pure. Alas, it is sometimes a wicked world, and John Waldsmith of the National Stereoscopic Association tells us that this picture was usually known as "An Optical Delusion." It appeared in various versions from the mid-1850s on (for the one we published, see below).* Ed.

Dear Sir: I am sure that many readers were disappointed that they could not view (in 3-D) your stereograph titled "Bliss Disturbed." However, I would like to suggest an amusing parlor trick that all of us in the field of radiology often use.

First, the picture should be held at about 18 inches. Then, cross the eyes and concentrate on the third image, which will appear in the middle. With persistence, the image will suddenly appear in three dimensions. Do not give up, and several aspirin should be close at hand during the initial attempts. The reason for the aspirin will become obvious, but the eyestrain is usually not harmful, and disappears with practice. There's a problem with "Bliss Disturbed": the images are reversed. Cut them out, put the right one on the left, the left on the right, cross your eyes, and enjoy yourself.
John P. Livoni, M.D.
Sacramento, California
The images are not reversed and can be seen in 3-D with the old-fashioned stereoscope, but the modern military photo-interpreters' glass has a narrower eye span, making it impossible to get the whole view in 3-D. Ed.

Dear Sir: In describing the era of home stereographs, the author wrote, "Americans felt they could reach out and touch every President from Lincoln to Eisen-

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We recognize that every site is unique. Temperatures, amount of sun, exposure to winds – all are factors we take into account in determining the insulation and construction norms appropriate to your site.

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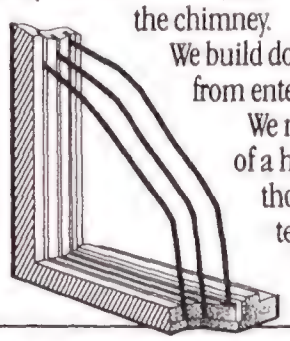
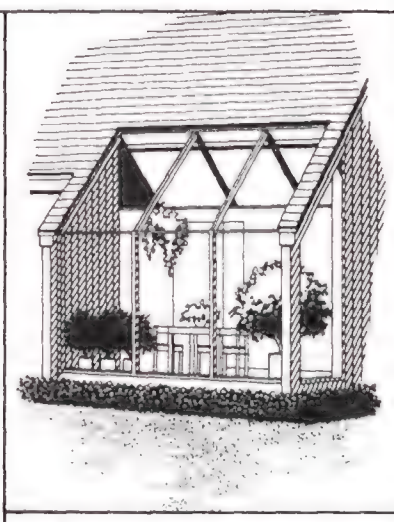


We build double entry-ways that prevent cold air from entering and warm air from escaping.

We maximize glass on the south-facing side of a house and minimize it on the others. And though most home manufacturers are content to use double-glazed glass, we recommend triple-glazing – except on the south side. Because our studies have shown that on the south side alone, energy allowed into the house by double-glazing outmeasures what is lost.

At the bottom of it all – a heat collector. Most Acorns can be built with a thermal slab which absorbs heat during the day, retains it for a calculated number of hours and releases it at night (when the temperature drops). It's relatively inexpensive to build; and even better, it's a one time expense that saves energy year after year.



Solar house: some down to earth talk. The features just described are known technically as passive energy conservation. If you want more, the next logical step is active solar heat collection. Acorn's own Sunwave® solar system doesn't need special fluids or special maintenance. It's simple to install, simple to operate and simple to understand. We'll be happy to send you details.

Save yourself the energy. Find out why Acorn's systems save time and money as well as energy. Enclose $5 with this coupon and we'll send you a complete planning and information kit containing 50 basic designs.

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hower." But, by 1930, the stereograph had lost much of its appeal. I think it would have been more appropriate to have said from "Lincoln to Hoover."
James A. Hathway
Tallahassee
Stereographs were still popular in rural areas, and did include Eisenhower. Ed.

Albert Einstein

Dear Sir: Lincoln Barnett's sensitive article launching the 100th anniversary of Albert Einstein's birth recalls two items that I will always remember. One, a woman's group, in a patriotic burst, passed a resolution in 1932 to have Einstein barred from the United States because it considered him a Communist.

The other incident is an unproved but believable story about Einstein playing a string quartet by Mozart with some of his friends. They were not playing together in one section and, after going through it several times, it still did not come out right. Finally, one of the players said, "The trouble with you, Albert, is that you just can't count."
B. D. Burks
Sun City, Arizona

Dear Sir: I was deeply moved by your article on Albert Einstein. He enjoyed a reputation, among laymen, beyond his scientific genius. Kindness and Einstein were synonymous.

Some years ago, I wrote to him expressing some personal feelings with the full knowledge that he would answer. He was not influenced by title or position. Of all my possessions, I consider his letter to me the most precious. I'd like to share it with you.

His letter, dated October 24, 1953, read in full: "To think with fear of the end of one's life is pretty general with human beings. It is one of the means nature uses to conserve the life of the species. Approached rationally that fear is the most unjustified of all fears, for there is no risk of any accidents to one who is dead or not yet born. In short, the fear is stupid but it cannot be helped."
Mrs. Eileen Dannheisser
Merrick, New York

Salmon war

Dear Sir: Our congratulations to Michael Parfit for his prodigious article, "Fisher-

You owe it to yourself to drive this car.

Introducing the all-new 1979 Mercury Marquis.

Take the Ten Minute Test Drive and discover a new Marquis standard of driving comfort.

You owe it to yourself to spend ten minutes comparing the 1979 Marquis to last year's Marquis and comparing its EPA Interior Volume Index ratings to any full-size car.

Minute 1: Check the luggage capacity.

No American car has more. With the new mini spare, there's even more room than last year.

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More shoulder room and hip room than the biggest '79 Buick or Olds: there's nearly half a foot more hip room in front. The '79 Marquis is even roomier than last year.

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Marquis has a new rear suspension. A four-bar link design with axle centered coil springs, front mounted shock absorbers and larger bushings at all suspension points.

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A reduced steering ratio makes steering more responsive, maneuvering in tight places easier.

Minute 9: View the road through expanded glass area.

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A new Marquis standard of driving comfort.

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LINCOLN-MERCURY DIVISION Ford

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Circa 1760-1780
Chippendale

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Lowboy*
Original
Circa 1750,
New England

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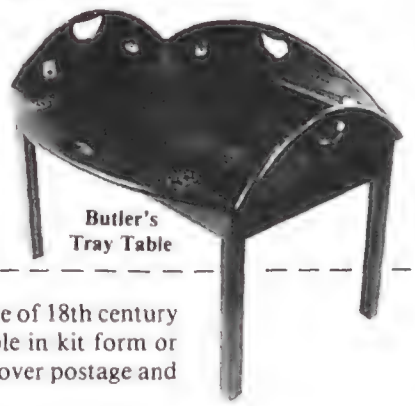
Some of the 24 Bartley classics, in hand crafted solid mahogany, oak or cherry. Totally authentic in design and beautifully constructed. Each kit is easily assembled and finished in your own home without tools. All pieces also offered completely assembled and hand finished.



Butler's
Tray Table

*Henry Ford Museum Reproductions

Please send me your illustrated catalogue of 18th century antique furniture reproductions available in kit form or hand finished. I am enclosing $1.00 to cover postage and handling.

Name _____

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men at sea in Puget Sound war of the salmon." We have lived on Puget Sound since 1903 and are aware of what a colossal job it must have been to assemble and document all of the data.

Arthur Lingenbrink
Seattle

Dear Sir: Your salmon article gives a full-page color photograph of Bob Satiacum's expensive swimming pool—a ploy guaranteed to negatively "color" the feelings of many whites in this area. The fact is that Mr. Satiacum is not now in the forefront of the controversy and, incidentally, has plenty of Indian critics.

Author Parfit points out the phrase in the Indian treaties that has been the point of the controversy—that treaty Indians will retain the right to take fish at "usual and accustomed grounds and stations . . . in common with all citizens." However, he did not explain the reasoning of Judge Boldt and other federal courts in arriving at the decision as to what "in common" means.

White fishermen and their defenders have long argued that "in common" meant that Indians have no rights to fish different from those of other citizens. The Supreme Court of the United States, as early as 1905, found this argument to be invalid. Briefly, the Court found that such a conclusion was faulty as it would have meant that the Indians had bargained away their lands for rights no different from those they would have without the treaty, and such a result would be inconsistent with the promises made in *U.S. v. Winans.*

David E. Shawver
Enumclaw, Washington

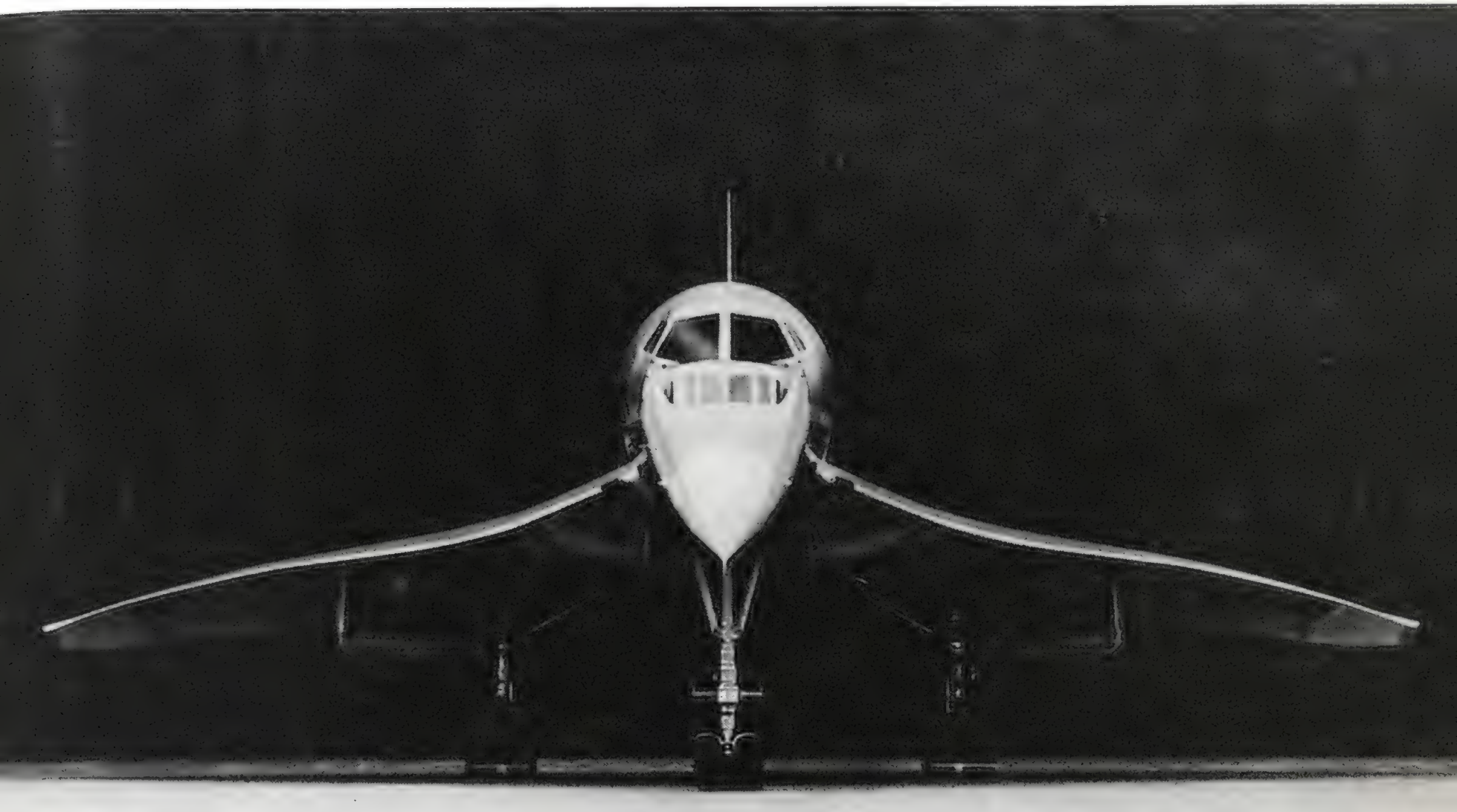
Alvin Ziontz, a fishing-rights authority and attorney whose law firm was one of those representing the Indian tribes in U.S. v. Washington, *argued in the Supreme Court on February 28, comments that Mr. Shawver's statements are "legally and historically accurate."* Ed.

Robert Tatin

Dear Sir: This is to thank you for the article on Robert Tatin, the French artist-fantasist. It is such a relief to find an artist who is not taking himself with deadly seriousness. Such a contrast to the five "old masters" at the Corcoran.

Edgar Miller
Clearwater, Florida

La Différence.



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New Brunswick/Prince Edward Island Rail-Drive. A carefree 8-day tour, by train and rented car, exploring the "down home" charm of New Brunswick, and the quaint villages and superb beaches of peaceful P.E.I. Priced from $260 U.S., departing Toronto, independent.

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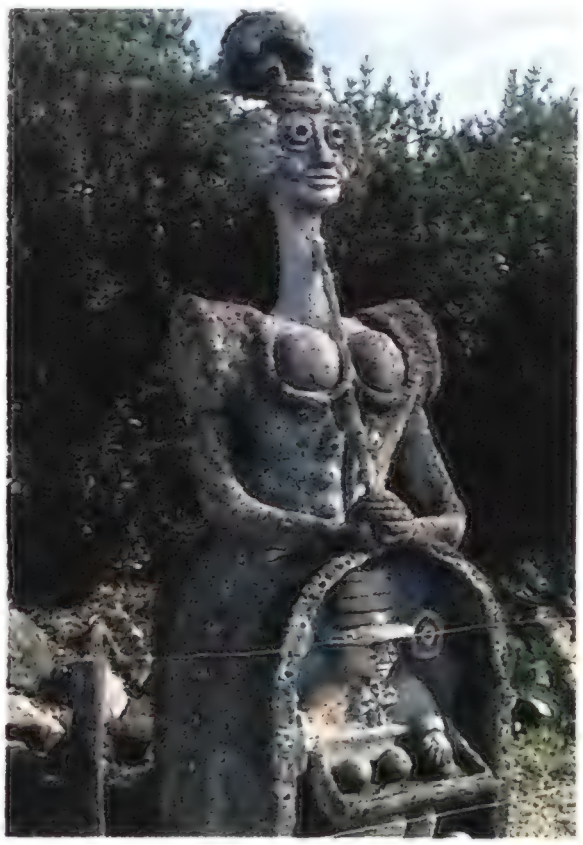
No matter where you want to go in Canada, VIA has a tour for you. For gateway, destination, departure point and other details on our escorted Explorer, independent Discoverer and low-cost unescorted Venturer tours, contact your Travel Agent or us, VIA Rail Canada, P.O. Box 8117, Montreal, Quebec, H3C 3N3, Canada. Prices quoted are per person, double occupancy.

Be good to yourself, take the train.

VIA

Dear Sir: Painter Seurat seems to be represented as a woman, which we know he was not.
Karl L. Anderson
Chicago
Seurat, wearing a hat, appears in his "mother's" womb (see below). Ed.

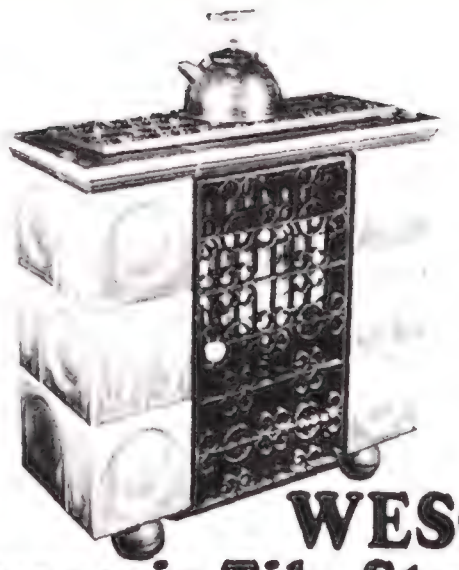


Carthage

Dear Sir: The Latin quotation in the fine, well-researched article by Dora Jane Hamblin prompts me to comment on Cato the Elder. I do not think this eloquent orator could possibly have used the truncated Latin attributed to him in some—not all—English texts. He concluded all of his speeches with the classic phrase that made him famous: *Ceterum, censeo Carthaginem esse delendam.*
Mrs. Margaret Y. Viragh
Washington, D.C.
Our sources were the Oxford Dictionary of Quotations, *cited from Plutarch's* Life of Cato, *and Bartlett's* Familiar Quotations. Ed.

Smithsonian's annual report

Dear Sir: In the Secretary's report on places for training conservators, the American Institute [not Federation] for Conservation of Historic and Artistic Works is the correct title.
Paul N. Perrot
Washington, D.C.



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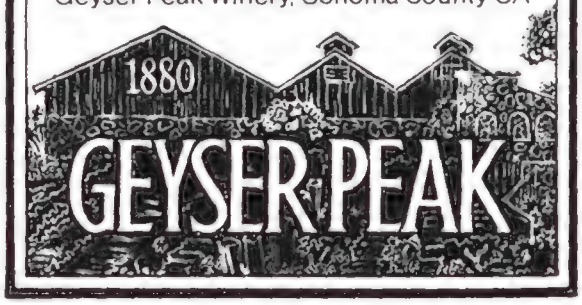
1978 VINTAGE

Gewürz, as in Gewürztraminer means "spicy." Dry, fruity, fragrant, fresh and appealing. These grapes are among the finest grown in Sonoma County, where fine wines began in California. Incidentally, these were our first grapes crushed in the 1978 harvest, and early bottling preserves the fruitiness of this versatile, dry white wine. Serve it as a refreshment, at dinner time, anytime!

Geyser Peak Winery, Sonoma County CA



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This is the camera that will be coveted for having the quietest rapid sequence film transport system available. Anywhere. Combining an unmatched level of ruggedly dependable performance with a new dimension in precision and control.

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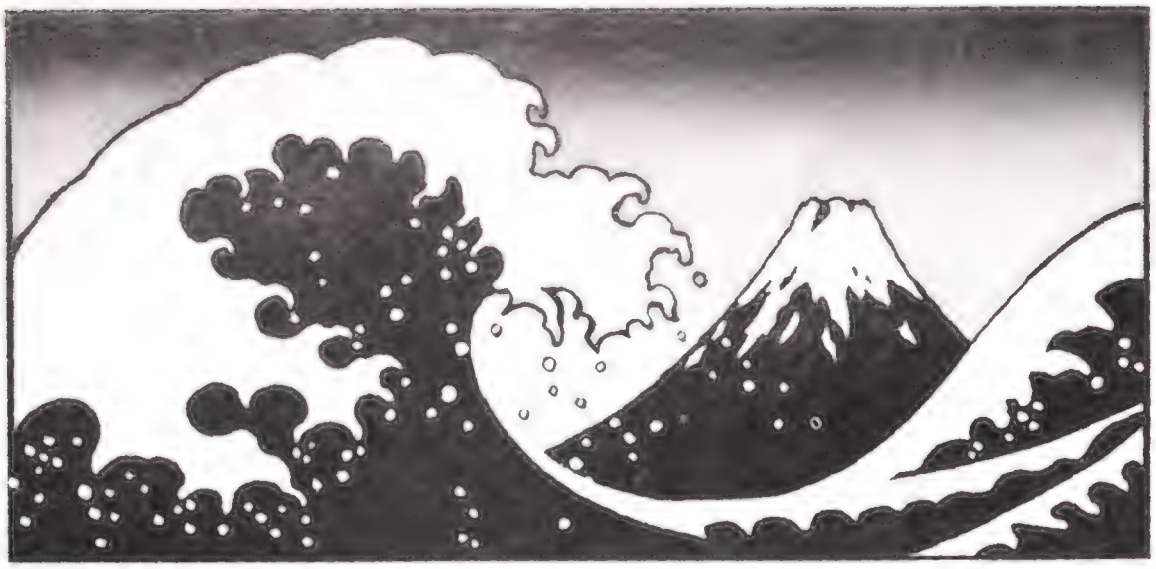

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Bushnell Give Us A Look

Phenomena, comment and notes

Dear Sir: In Don Moser's report he found Gatlinburg, Tennessee, an enigmatic place to hold a symposium of the Council for the Advancement of Science Writing. He went on further to note a lecture by Dr. John Mercer on the "greenhouse effect" on this globe, which is caused by carbon dioxide. Mr. Moser's enigma should have been solved at this point since the Great Smoky Mountains are so-called because of the cloudy effect caused by decaying forest matter creating carbon dioxide. It seems to be a very natural place to hold a meeting to discuss the greenhouse effect.
Jim Grimes
Fort Lauderdale, Florida

Dear Sir: Don Moser writes about the warming trend in West Antarctica, which may mean the inundation of the southern part of Florida. He adds, "If we can stave off the next Ice Age by sacrificing Miami Beach and—with luck—Atlantic City, there are those who might consider the bargain a good one." Could Mr. Moser have been trying out the casino there and lost?
Marion E. Johnston
Brigantine, New Jersey
Mr. Moser says that gambling is not one of his vices. Ed.

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LIGHT UP HER LIFE

Give her a Third Century Lantern Pendant – an exquisite gift of rare beauty and historic importance – with its 10 point Diamond encased in 18 Karat Solid Gold.

Perfect for Anniversaries – ideal for Birthdays – and extraordinary as a gift for Mother's Day in May and Graduations in June.

A detailed re-creation – in miniature – of the historic Paul Revere-Old North Church Lantern – the famous "light" that gave birth to America.

You are part of America's "Third Century" society – so is she. It is the beginning of a New Era – a fresh start. An Era with its own new symbols.

Such a symbol was created when America's Third Century officially began, back on April 18, 1975. Our former President, Gerald R. Ford, officially marked the start of America's third 100 years as a nation, in a solemn ceremony held at Boston's famous Old North Church. Perhaps you saw this ceremony on network TV and you saw the President light the "Third Lantern for America's Third Century." Perhaps you even recall the wonderful spirit that prevailed at the time.

The Lantern used in the ceremony was an authentic Sterling Silver full-size re-creation of the one remaining lantern of the two famous signal lanterns used back in 1775, when Paul Revere made his famous ride. The relic of the original, an outstanding example of 18th Century Colonial craftsmanship, is on display at the Concord Antiquarian Society Museum in Massachusetts. It is seen and admired by many thousands of visitors every year.

The ceremonial lantern is an impeccably accurate, detailed copy of this very historic artifact, so highly cherished by the Museum. When the Limited Editions Collectors Society was selected to make the re-creation, our artisans went to the Museum where they made finite drawings, detailed photos, and wax impressions of the original. The re-creation *had to be perfect.* After all, the Paul Revere-Old North Church Lantern is such an important national symbol – it marked a most critical moment in our nation's struggle for Independence. Its warning glow flashed from the Steeple of the Old North Church and played a vital role in altering forever the course of history. It is the "light" that gave birth to our nation.

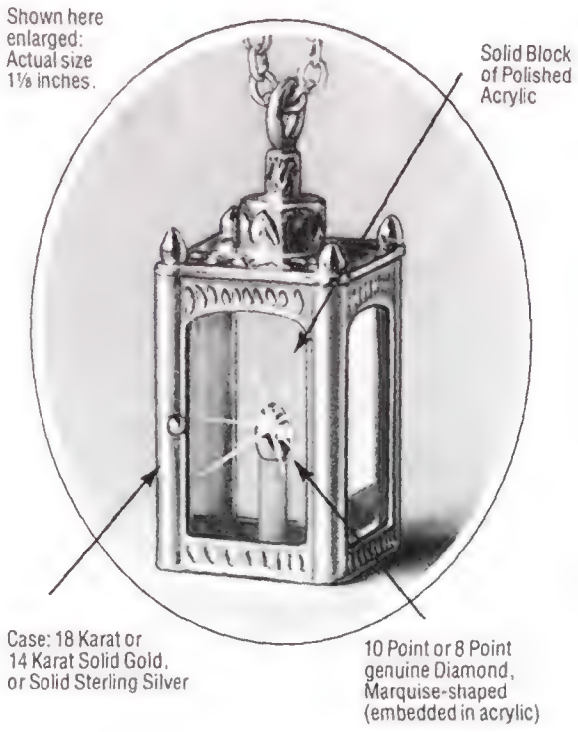
Since that memorable Anniversary ceremony took place, the Society has issued a number of similar full-size re-creations of the famous lantern, as official commemoratives. A portion of the proceeds from the sale of each large lantern goes into a special maintenance fund at Boston's Old North Church. They have been offered in Registered and Limited Editions and crafted in copper, brass, and antiqued or polished pewter finishes, plus a very limited number in Sterling Silver. These have been and are still being purchased as important collectors pieces, by Americans everywhere.

A UNIQUE LIMITED EDITION, NOT AVAILABLE IN STORES

Because of the response to our offer of the full-size reproductions, we introduced (early in 1978) a Limited Edition of a new, beautifully-crafted "miniature" of the famous artifact – in the form of an exquisite piece of jewelry – our *Third Century Lantern Pendant* – an extraodinary gift item. It was cast using 18 Karat Solid *Gold* and utilized a 12 Point Diamond. Shortly after our first advertisement appeared, there was a large increase in the cost of rough diamonds announced by DeBeers. The price of the Pendants had to be increased approximately 25%. Nevertheless, within ninety days, the entire Limited Edition of 500 units was sold out!

The molds and tools used for making that particular Diamond Pendant have now been destroyed, and the Limited Edition is closed. However, because of the many requests we have had for this unique jewelry item, we designed a smaller more delicate version of this unusual Pendant, especially appropriate for the new fashions of 1979.

We offer you the opportunity to be among the very limited number of collectors who will acquire this new Limited Edition piece. It, too, is exquisite and makes a wonderful gift for Birthdays, Anniversaries, plus other important occasions, and is especially appropriate for Mother's Day coming in May or for Graduations in June. Wearing this Pendant subtly demonstrates pride in America's past and confidence in its future, all as our nation embarks on its Third Century. The Pendant makes a unique, charming, and thoughtful gift, one of the finest and most meaningful that you can ever give. What pleases a woman more than a gift of Gold or Silver and Diamonds? She'll be enchanted when she first sees it and delighted as she displays her Third Century Lantern Pendant. It's a great conversation piece.


Shown here enlarged: Actual size 1⅛ inches.
Solid Block of Polished Acrylic
Case: 18 Karat or 14 Karat Solid Gold, or Solid Sterling Silver
10 Point or 8 Point genuine Diamond, Marquise-shaped (embedded in acrylic)

INDIVIDUALLY HANDCRAFTED

Similar in styling to the original, larger Pendant, this new smaller *Lantern Pendant* also comes in several types of precious metals. The new Limited Edition version is offered in 18 Karat Gold with a delicately worked candle and flame, permanently embedded in a block of crystal-clear, polished acrylic. The flame, itself, is a stunning 10 point Marquise-shaped diamond! A dazzling gem-stone which perfectly symbolizes the warning "light" on that fateful night in 1775. To assure their rarity, this new Edition is being tightly restricted to just 1,250 pieces – or just 25 for each of America's 50 states.

The Pendant is sturdy and solidly constructed, yet very comfortable to wear. The Diamond, permanently locked into the acrylic block, cannot be lost, and it will keep its lustrous sparkle forever.

A Registered Edition is also available – in 14 Karat Solid *Gold* or Solid Sterling Silver with an 8 point diamond flame. When the Limited Edition is sold out, however, the dies and molds will be destroyed and both Editions will be closed, forever.

The Registered Edition can also be purchased – at a much lower cost – with a satin yellow crystal flame instead of the diamond flame. In fact, you can own this

remarkable Pendant for as little as $95.

Each Pendant, in both Editions, is individually hand-crafted and cast by skilled goldsmiths and silversmiths. Each is hand-assembled and polished with the utmost, meticulous care. Twenty-three separate, hand operations are required to assemble each Pendant prior to final inspection by the Master Goldsmith. Every Pendant comes with either a 12 Karat Goldfilled or Sterling Silver chain, 24 inches long, which can be easily adjusted for casual or dress wear.

The Third Century Lantern Pendant is an extremely outstanding jewelry value. A diamond ring using a similar size and quality of diamond, plus the same weight content of gold or silver, would cost considerably more. You can go to any jewelry store and purchase a variety of mass-produced pendants using similar materials. You will find that most will cost more—and some much more—than the Third Century Lantern Pendant. However, none will have our Pendant's unusual combination of handcraftsmanship, rare beauty, unique design, historical significance and value.

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Phenomena, comment and notes

Ice Age delayed, a fight over thrown string, dinosaurs as automatons, and more on the strategies of sex

We hear that better intelligence would perhaps have ameliorated the situation in Iran. Lest the intelligence community miss what may be an obscure early-warning sign of trouble brewing elsewhere, it seems patriotic at least to discuss the problem of thrown string. Mathematicians apparently are concerning themselves with explaining the average distance between the ends of a piece of string when the string is repeatedly thrown onto a table.

Two Australian mathematicians seem to have the most reasonable hypothesis, but it is roundly attacked in the pages of *Nature* (Vol. 277, No. 5692) on the grounds that the experimenters failed to take into account the desire of the experimenters to obtain a random set of throws. The attackers are from Northern Ireland.

Ever the diplomatic sons of Albion, editors of *Nature* provided the Australians space to reply, which they did, implying that the Irishmen are irrational. When that kind of exchange takes place over the throwing of string, can the gauntlet be far behind?

Strategic sex

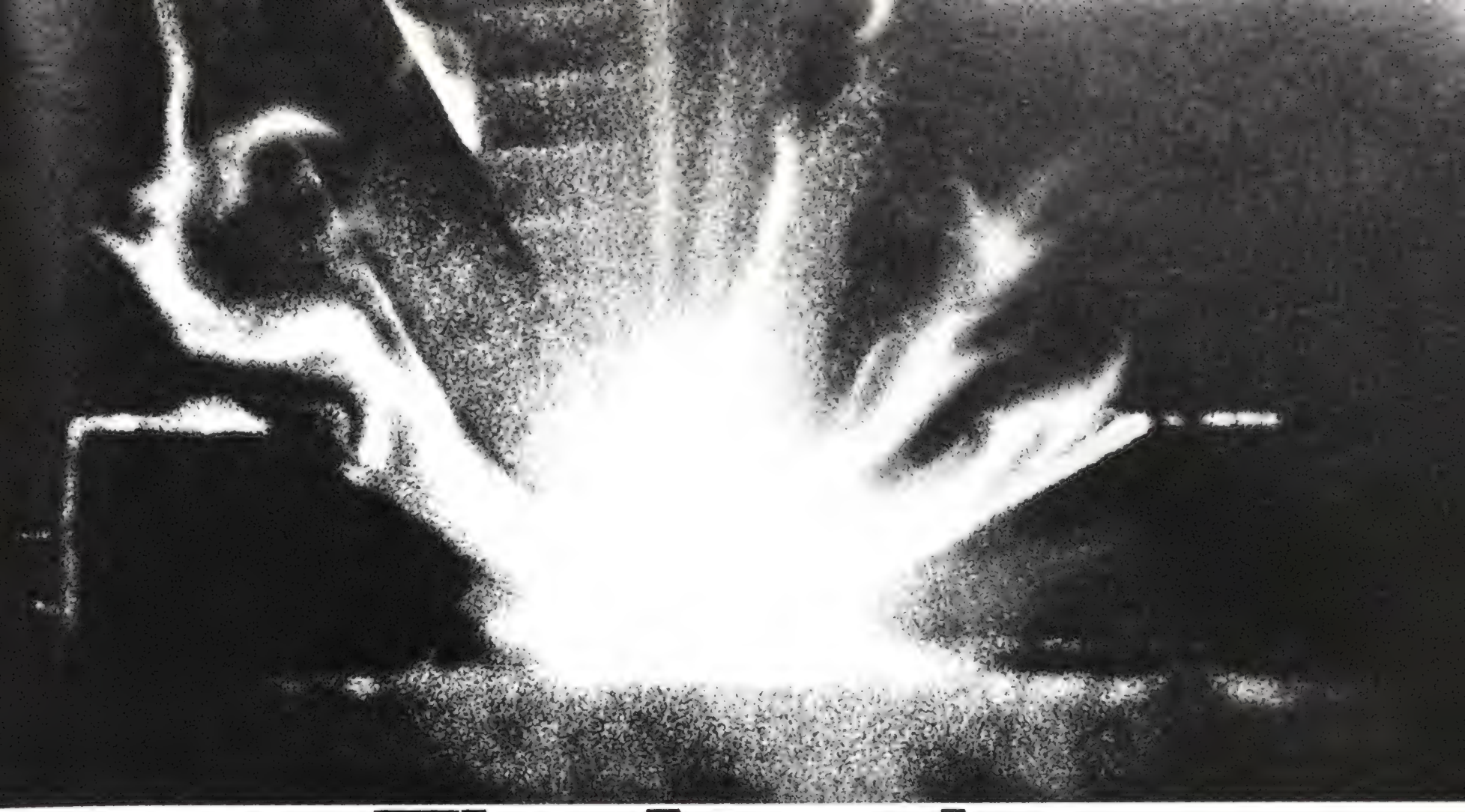
Speaking of gauntlets, there is a book out called *Gyn/Ecology: The Metaethics of Radical Feminism* by a theologian named Mary Daly, in which she has some very nasty things to say about men. "Myth Masters" they are called, perpetrators of the "Sin of Phallocracy." With this kind of accusation flying about one's head, it is with maximum trepidation that one tippy-toes into the fray, but science, after all, deserves equal time with theology.

Conventional mythology has long held that men are more promiscuous, more aggressive, more domineering than women. Lately philosophers have been explaining that there are really no basic psychological differences between the sexes, that it is merely a question of society imposing differing psychological roles. (Ms. Daly may disagree by saying that men are inherently psychological bad news and that it will take something called the "Amazon Argosy" to create—somehow—a world of peace and sensitivity.) Now Drs. Martin Daly and Margo Wilson of McMaster University in Ontario have come along to say that if society imposes different roles on the sexes, it is no accident but perfectly appropriate in the light of evolutionary biology and the "strategies" creatures have evolved to achieve survival.

Writing in *New Scientist* (Vol. 81, No. 1136), they provide a short course in sociobiology. In most of the higher orders of animals (and in some of the lower), females contribute more than males to the nurture of the young. In many, if not most, mammal species the trick is to devote a lot of attention to a few, well-spaced offspring. Thus a female gains little by having multiple mates or by being promiscuous. The male gains an advantage (in terms of having his genes carried on in subsequent generations) by sowing the wild oats.

"With nothing to lose but some sperm," the authors point out, "males commonly court indiscriminately. Male butterflies court falling leaves and male frogs mount galoshes." Similarly, they point out, in 849 human societies catalogued by an anthropologist, George P. Murdock, 708 permit a man to take more than one wife, and four (four, ladies) permit women to take more than one husband.

In animal groups where males share more of the parental chores, cuckoldry becomes a matter to be nervous about. A male who spends his time raising some other male's child is, in evolutionary terms, wasting his time, so in many species, mated males sequester the females and spend a good bit of energy fighting off other males. The authors cite a fellow researcher's observation: "It is in precise-



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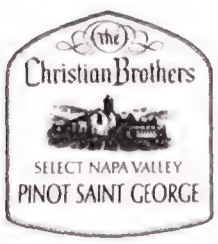

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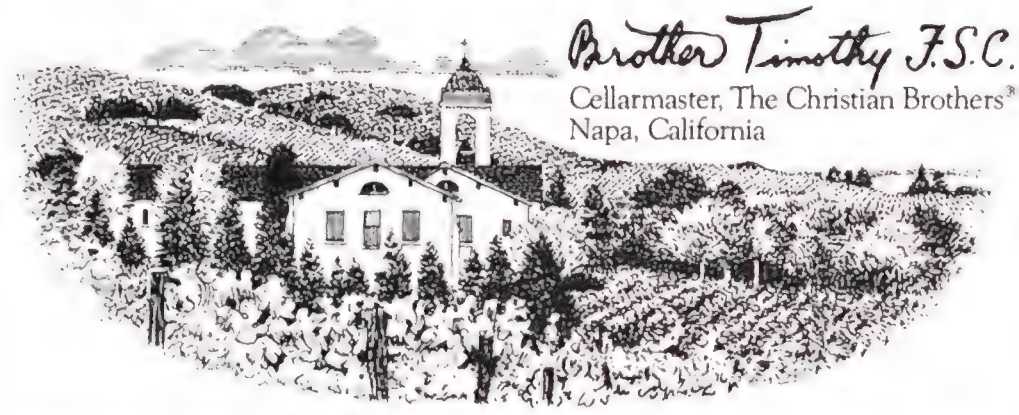

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ly those human societies in which paternity confidence is unattainable that males make their sisters' sons their heirs and thus invest in known kin."

Studies of American homicide have shown cuckoldry to be the chief cause of murders of women by men and to play a substantial role in male-male murders.

The authors point out that cultural attitudes of course play a role (perhaps bad) in role differences, and also that among humans—with long-term marriages and with considerable male input into parental activity—the differences between the sexes suggested by evolution are mitigated, but not absent.

Well, we are beginning to take charge of evolution by tinkering with genes. I suppose that after several billion years of life on the planet, it may be time to rethink the evolution of sex roles, too. Maybe the Amazon Argosy is the answer that has escaped us lol these eons.

Dinosaurs re-redux

Here comes another way of thinking about the extinction of dinosaurs, a subject which captures the imagination even of grown-ups though the last dinosaur lived some 65 million years ago. They are sort of the Babe Ruths of evolution: they couldn't possibly play today's baseball, but they sure were something in their day.

John Fremlin is a professor of applied radioactivity at the University of Birmingham, England, and just what he's doing messing around in the fields of the paleontologists is unclear, but the British are more apt than we Americans to ignore the safe boundaries of their "disciplines" and to play in others' pastures.

His theory has to do with automatons. Bees, he says, are automatons, programmed to do things one way and one way only. They have no "freedom of choice," no program that says if you made an error—even an accidentally successful one, like getting nectar from an unfamiliar source—you can take further advantage of it. You say, as it were, whoops, and go back to the old ways.

On the other hand, mammals evolved with sufficiently complex programs that, like some computers, they could be self-correcting, taking advantage of some accidental bit of empirical knowledge. Chased by a predator, for example, into a foreign but suitable niche, a mammal might just hang around instead of hot-

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footing it back to the old, perhaps increasingly unsuitable, niche.

In any event, dinosaurs were the biggest and most successful automatons, says Professor Fremlin, and mammals the first to have a program that permitted "choice." This, he says, must have had something to do with the most significant event since colonization of the land—the replacement of dinosaurs by mammals.

It sounds pretty good, but on reflection, it is a little hard to imagine how a bunch of little mammals could have had much direct effect on the disappearance of the dinosaurs. Even if they had freedom of choice, you'd think the only choice available to the mammals was which way to dart to get the hell out of the way.

March of science

Science continues to proceed, you will be happy to hear, in its stately manner down the many byways of rational inquiry. And who are we laymen to question the subject matter of its probings?

For example, two scientists explain in *The New England Journal of Medicine* (Vol. 300, No. 2) that a lot of people believe births occur most frequently during the time of the full moon. They point out that even many maternity-ward nurses believe it. Now the two researchers' analysis of 11,691 live births and 168 stillbirths at the University of California, Los Angeles, Hospital during 51 lunar cycles should promptly put such a nonsensical notion to rest. They found no correlation whatsoever between frequency of birth and the lunar cycle.

Another role of science is, occasionally, to confirm what one already thinks. For example, John Adams of Cornell University went all the way to New Zealand, where, along the Clutha River, he collected a lot of pebbles and subjected them to a (to me) stupefyingly complete statistical analysis. And, to be brief, he reports in *Science* (Vol. 203, No. 4376) that the process whereby pebbles grow smoother, smaller and more homogenous as they are transported downstream can be satisfactorily explained by abrasion. That's just what I would have thought but never had occasion to think about.

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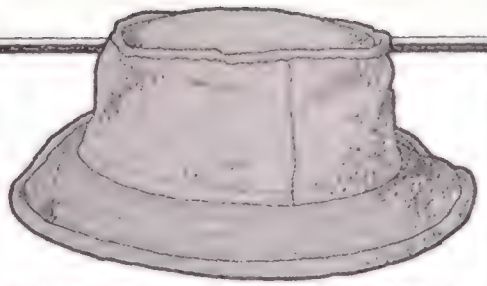

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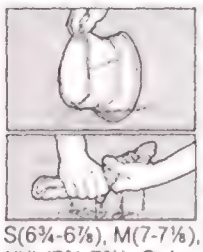

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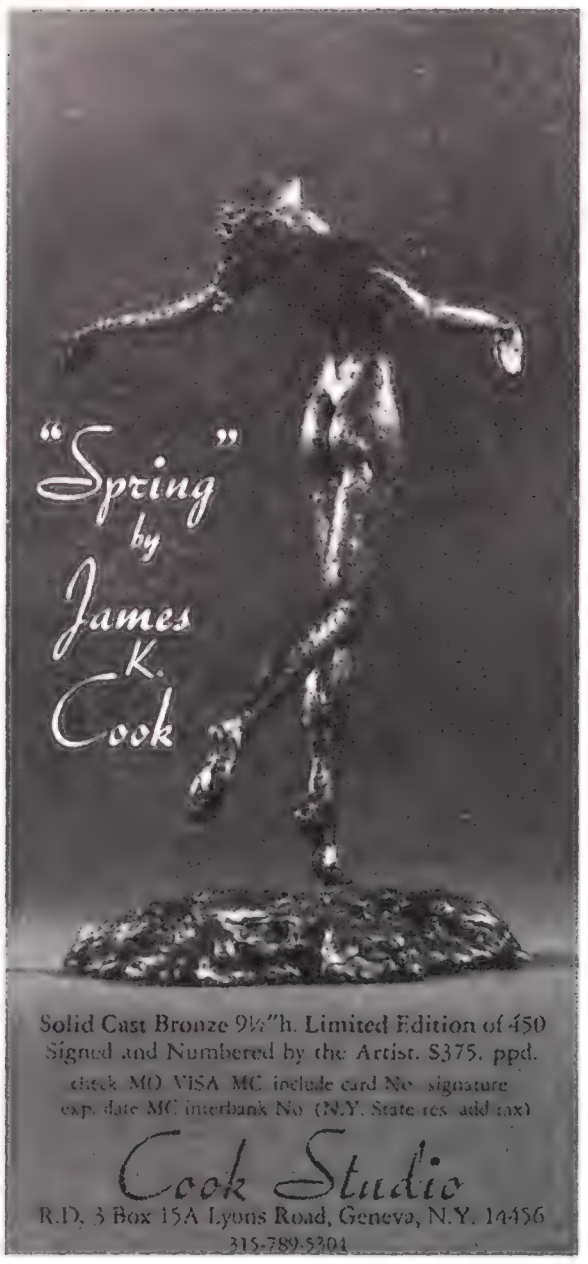

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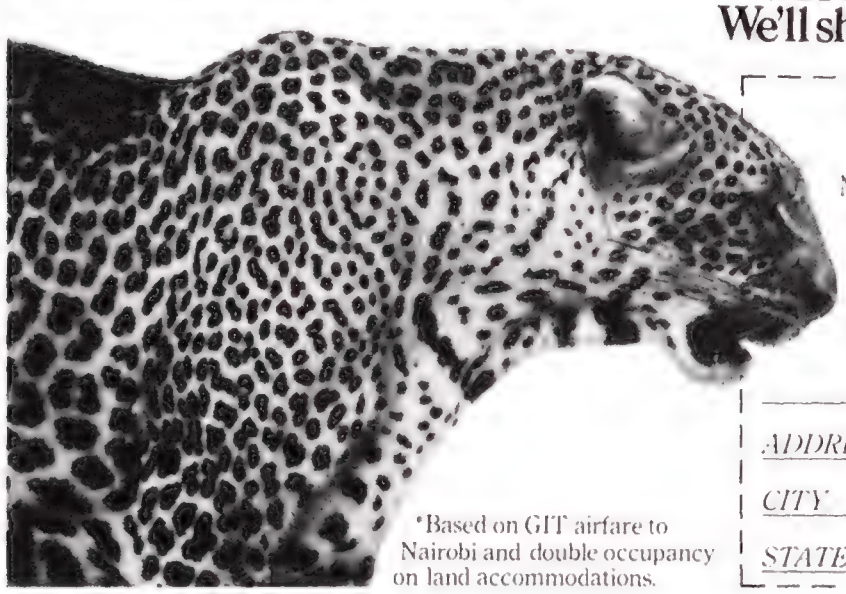

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back and forth about whether there's a warming trend or a cooling trend and makes predictions of one sort of imminent doom or another. Carbon dioxide is called either culprit or savior, and everyone in meteorology gets a grant to track it through the Earth's digestive system like barium through the bowels of a laboratory rat. The main perception at which meteorologists have arrived, it seems, is that there is no such thing as normal weather which we are about to veer dangerously away from. Weather, as my friend Ted Park's friend, Slocum, could have told us, is shifty. Shifty is normal in the affairs of weather.

Climate is a more long-term business and I suppose it is a legitimate concern to worry about what the climate is going to be like in 100 years or so. And dutifully, *Science News* (Vol. 115, No. 2) has uncovered a gentleman named James D. Hays of Columbia University's Lamont-Doherty Geological Observatory who claims to have found the canary that will let us know when to invest in the down-parka business.

It is supposed that Ice Ages start in the north and effect the same horrifying business in the south. But Hays says the Southern Hemisphere is more sensitive to climate change than the insensitive north.

Diatoms occur in open oceans that are free of ice. Core samples from Antarctica show alterations of diatom material permitting scientists to chart how much ice, seasonally, extended northward in the southern oceans. From such data, Dr. Hays says that the increase in ice on the surface of southern seas occurs rapidly (like 300 years) and presages the increase of northern ice ages. Orbital changes of the Earth cause slight differences in the sun's radiation and therefore the seasons. A few thousand years later, southern sea ice builds up abruptly, reflecting more of the sun's beneficial rays into the uselessness of outer space, and the northern climes, sheeplike, respond a few thousand years later by thrusting glaciers southward into otherwise perfectly decent neighborhoods. There is presently no apparent buildup of southern ice, says Dr. Hays, and I, for one, am delighted. It's April now and, once again, spring is happening around here.

As far as winter is concerned, even a good one is for me nothing but an outrage and an insult.

—James K. Page jr.

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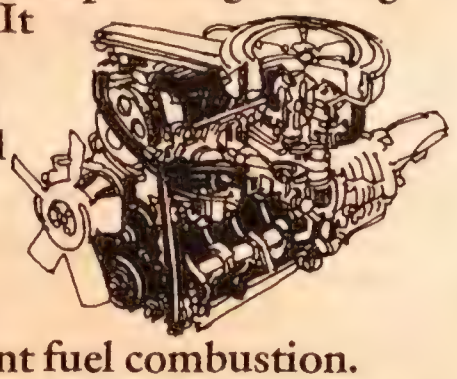

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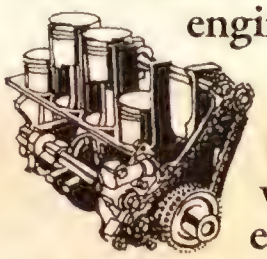

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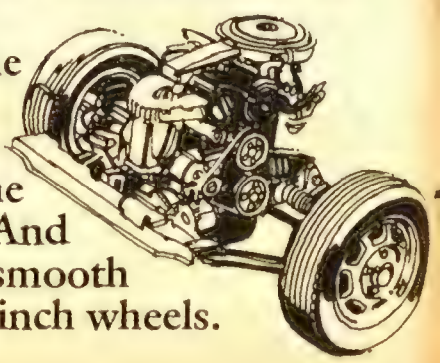

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Independent rear suspension on Champ and Colt Hatchback is the kind of technology you find on Mercedes or BMW. In addition, MacPherson-type struts at front are on the Champ, Colt Hatchback, Challenger, and Sapporo.

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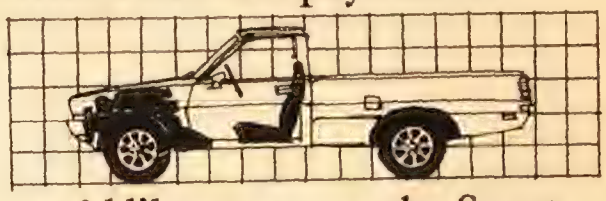

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YOU HAVEN'T SHOPPED IMPORTS UNTIL YOU'VE SEEN US.

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Ambassador, a new hybrid tea rose introduced in Europe two years ago, will make its appearance on U.S. market for spring of 1980. It was created by Alain Meilland's mother, Louisette, in 1967.

By Maureen Green

A French family of rose hybridizers and the best-selling magic it works

Making a single new variety of flower may take 100,000 crosses, but the ideas begin as gleams in the eyes of the Meilland group

When the new French Ambassador arrives in the United States next spring, there will be no reception at the State Department, although there might be a welcome at the White House Rose Garden. For this Ambassador is a richly colored, lightly perfumed beauty, the latest creation of the Meilland family, whose company has produced some of the world's most ravishing and popular roses.

Like any other Meilland introduction, Ambassador has survived a ten-year scrutiny from the day when it was merely one of 60,000 new rose crosses, through seasons of examination in the rose fields for the elegant shape of its hybrid tea bloom, its fashionable orangy color, its perfume, its novelty. Above all, its hardiness and adaptability to the amateur garden have been tested in trial grounds in all of the 25 countries around the world where the Meilland group, Selection Meilland, has agents. Of all the garden-rose crosses made each year at Meilland, only two or three reach the final selection panel ten years later to be given a name instead of a mere number, and launched upon the world to compete for medals, prizes and markets.

To Alain Meilland, the 38-year-old head of the company, a rose is more than a rose. Some of them are his family: apricot-scented Grand'mére Jenny, giant Madame A. Meilland (known to most of the world as Peace), heavily perfumed Papa Meilland, the Michèle Meilland and the Sonia. Members of this family have been breeding new roses, and naming favorites for each other, for five generations, and their horticultural

Francis Meilland's Peace, named as Berlin fell in 1945, became the most popular garden rose in history.

Color photographs by Farrell Grehan

Claudia and young Francis Meilland raised roses while Antoine (in tunic) served in World War I.

Grand'mère Jenny moved to Lyon at Claudia's death, and is remembered by a rose of same name.

progeny have proved as robust and cosmopolitan as their family dynasty.

When Alain took over the business nearly 21 years ago, his father's famous hybrid, Peace, had taken the world's gardens by storm and become the best-selling rose in history. Alain has since built the company into an international empire, vying with hybridizers the world over for the rose fancier's favor. He estimates that at least 50 percent of all the world's garden roses now contain some strains of Meilland stock in their complex genealogy. At the same time, Meilland roses make up three-quarters of all cut-flower varieties cultivated for the florists' market in France, dominate in Spain (90 percent) and Italy (70 percent), and take half of the most competitive market, in Holland.

Although many amateur gardeners enjoy hybridizing roses (the American Rose Society, for example, registers some 300 new roses a year), the breeding of new varieties has become an intensely competitive industry. The introduction of a new rose, like Ambassador, can represent a $45,000 investment, and a really successful rose may smell sweet indeed, generating up to $500,000 in income. In this international war of the roses, the Meillands have their counterparts in many other countries—such as the Kordes family in Germany whose roses include Seashell and Iceberg (cover), and the McGredys from Ireland whose Sundowner was a recent All-America Award winner. American rose growers such as Jackson and Perkins and Star Roses tend to be companies, not families. But the French can be said to have virtually invented the modern rose, and the Meillands have been making improvements on it almost ever since.

The French romance with the rose became a passionate affair in the early 19th century when the Empress Josephine created a magnificent rose garden at Malmaison boasting each of the 250 varieties known in her day, and employed the brilliant botanical artist Pierre-Joseph Redouté to paint them all. Josephine's patronage also turned crossbreeding into a national hobby, and the influence of Malmaison gave French growers the head start that, in 1867, produced the first hybrid tea rose, suitably named La France.

Alain Meilland's great-great-grandfather Joseph Rambaux was a gardener at the Tête d'Or park in Lyon at the beginning of the 19th century, and dabbled in roses in his spare time, propagating and crossing old-fashioned Bourbons, Noisettes and tea roses in his own garden. By the time he died he was successful enough to leave a thriving garden with ten new varie-

Maureen Green's most recent contribution to SMITHSONIAN *was on the "Re-creation of Olympus" in Victorian times, in the December 1978 issue.*

Alain Meilland introduces Matthias to a family rose, while wife Nadine, mother Louisette look on.

Within the Meilland family there are two Sonias: the 11-year-old daughter and the rose with her name.

ties, and a small business selling fruit trees and rosebushes, to his son-in-law Francis Dubreuil. Dubreuil proved an excellent breeder and grower, introducing Sarah Bernhardt and many other new roses at the turn of the century. His daughter Claudia, one of the many crucial women in the family story, married Antoine Meilland, her father's assistant and the first of his farming family to be obsessed with rose growing. Together Antoine and Claudia built a successful nursery devoted to propagating and selling rosebushes. During the worst years of the First World War, when Antoine was away fighting, Claudia kept a skeleton rose stock going. She worked in the fields in trousers, to the dismay and scandal of country neighbors, who had never seen a woman in trousers before.

Reestablishing his nursery was sufficient task for Antoine after the war, and left him no time for breeding new varieties. But their son Francis, born before the war, changed the whole scale and style of the Meillands' contribution to roses. As a child he had worked alongside his Papa Meilland in the rose gardens, and at 14 was allowed to abandon school. The business of Meilland and Son was becoming widely known in France and England, and Francis' first efforts at hybridizing attracted the notice of an American rose grower, Robert Pyle of Pennsylvania, Star's founder. In Europe in 1932, Pyle visited the Meilland rose

The Meilland's best-selling cut-flower rose, Sonia, is a grandiflora favored for its long-lasting freshness.

gardens at Tassin, near Lyon, to meet the promising young Francis, and offered him a contract for any new roses that he might produce.

Three years later Francis Meilland, who had never even been to Paris, went off to tour the United States, visiting rose breeders across the country to study their ideas and methods. He traveled for two months, covering 15,000 miles in a secondhand car, and was amazed by the technology available to American growers. He could not take home the new humidity-controlled "cold stores" he had seen, but he did return carrying a suitcase bulging with American rose catalogs, all in color. In Europe, rose catalogs at that time were simply black-and-white lists of the varieties for sale (the Meilands offered 300), with description and price. Francis persuaded his father to put several pages of color in the 1936 catalog. It was a smash, and the next year's catalog sold out their stock in just 23 days.

Having introduced American marketing techniques to the French, Francis soon gave the Americans a rose in return. After eight years of crosses and disappointments, he finally had a new rose in 1937. He had sent buds of the numbered yellow rose to Robert Pyle for trial growing and asked him to think of a name for it. Pyle called it Golden State, and it was adopted as the emblem of the San Francisco International Exhibition. The rose was an instant success, winning praise and prizes and earning in Meilland's own country the title *la plus belle rose de France*. Celebrating his success, Francis called on the Paolino family of Cap d'Antibes, rose-growing friends who had come to France from Italy a generation before. But it wasn't their roses he sought; it was their daughter Louisette, and in January 1939 they were married.

That was an inauspicious year for European rose growers. Francis Meilland was very interested in one rose seedling from a cross-pollination in 1935, now growing with the number 3-35-40 around its neck. A number of international rose breeders who came to France in the summer of 1939 visited him and his bride in Tassin and every visitor paused long before 3-35-40, tall and vigorous with glossy green foliage, and enormous gold and ivory flowers fringed with pink. But by the end of that year, Europe was divided by war. Parcels of budded 3-35-40 had gone to friends in Germany and Italy, and with the aid of the

To make a hybrid, Louisette's hands remove petals and anthers of bud, preventing self-fertilization.

Next, pollen dust from the anthers of another parent is painted onto the stigma of the emasculated bud.

American consul at Lyon, a small package was dispatched on the last plane to leave France for America, addressed to Robert Pyle in Pennsylvania. Francis Meilland, never strong, had been turned down by the army, and continued to work in his fields, but international communications had ceased.

Alain Meilland was born during the war, as the family went on growing roses, along with vegetables, and putting out catalogs. They did everything except sell their roses, exchanging them for wine or coal instead. Francis had named his remarkable new rose after his memorable mother, the pants-wearing Madame A. Meilland. News trickled through that their German friend had budded up the same rose and, amazed by its beauty, named it Gloria Dei (Glory be to God); it was being sold under that name in Hitler's Germany. From Italy, finally, they learned that the Italian grower had named the same rose Gioia (Joy).

Not until after the liberation of France, however, did the Meillands get a letter from Robert Pyle. It was worth waiting for. Pyle had lost no time when he received the Meillands' packet of budding wood, and he had arranged to have the rose propagated and tested in every climate of the United States. So impressive was its performance, and so outstanding its bloom, that the American Rose Society had decided to hold a "Name Giving Ceremony" in Pasadena for this flower which had been flown out of occupied France. Pyle proposed to the rosarians who came to Pasadena on April 29, 1945, that "this greatest new rose of our time should be named for the world's greatest desire: Peace." The name was adopted on the day that Berlin fell, and the rose greeted delegates to the first United Nations meeting in San Francisco.

Nine years later, with an estimated 30 million Peace rosebushes flowering around the world, Francis Meilland wrote in his diary, "How rewarding it is for an ordinary working gardener to know his rose is growing in cottage gardens, in the grounds of mansions, around churches, and mosques and hospitals, and in public parks; and to think that so many people are now seeing the rose he alone once saw in his mind as he strove to create it.

"How strange to think, too, that all these millions of rosebushes sprang from one tiny seed no bigger than the head of a pin, a seed which we might so easily have overlooked, or neglected in a moment of inattention, or which might have been relished as a tit-bit by some hungry field mouse."

The rose that field mouse missed went on to bring the Meillands a fortune in American royalties and, as British hybridizer Edward Le Grice writes, "was to have a profound effect on all rose breeding every-

The cross-fertilized bud is then labeled with details of parentage, and covered with a protective paper cap.

Protected from stray pollen carried by insects or wind, buds will ripen into rose hips filled with hybrid seeds.

Meilland research has produced a florist rose, Red Success, lasting 15 days, as in Antibes exhibit.

where, giving a new standard in growth, health and size of bush and flower."

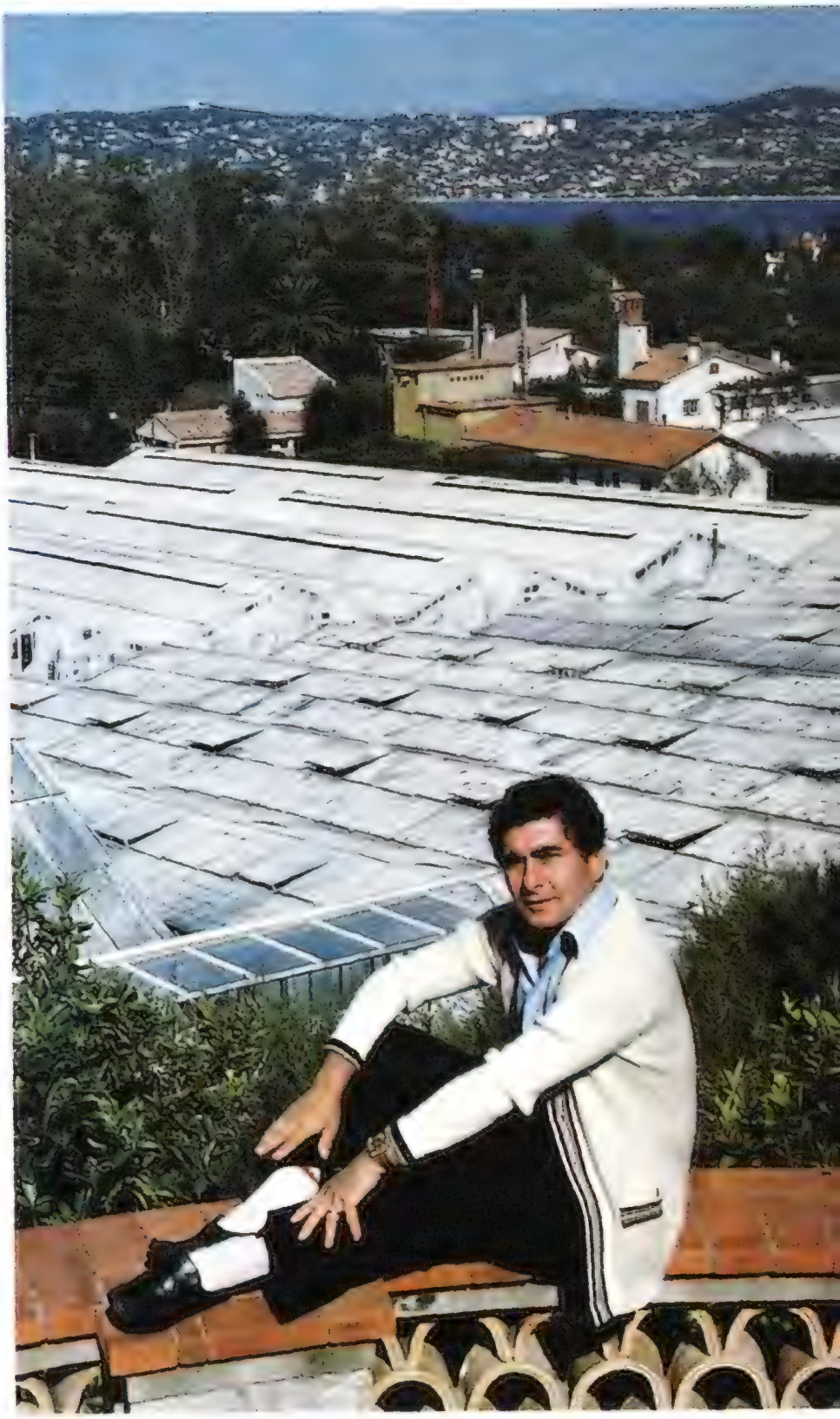
The success of Peace financed a move from the Lyon region to some land alongside that of his Paolino parents-in-law in Antibes, where Francis could devote full time to his hybridizing in the more indulgent climate of the Riviera. But he continued a partnership in Lyon with Francisque Richardier, laying the groundwork for the company's diversification. And Francis launched his campaign to establish plant patents in the law courts of Europe, a case which he speedily won in France, then Italy and Spain, but which dragged on in England until 1964. Meilland also gave his business a totally international outlook, establishing a network of 18 leading rose growers from around the world who formed the group originally named Universal Rose Selection to assist each other in selecting, testing, growing and distributing new roses. Today, 25 countries are represented in this rose community, and their agents arrive each June to join a jury, with Alain Meilland and his staff at Antibes, voting on new roses for possible introduction.

Throughout the company's postwar boom, Alain Meilland assisted his father and mother in the fields, mastering the art of hybridizing garden roses. But he also was intrigued by the Paolino cut-flower gardens, where he encountered a very different breed of rose. Unlike the garden bushes, those supplying the florist trade are cultivated in greenhouses and must produce a profusion of long-stemmed blooms able to survive handling, shipping and cold storage, and remain fresh for many days after they are cut. The Paolinos and other local growers had sent off trainloads of roses and violets to Paris and even to Saint Petersburg for more than half a century.

When Alain Meilland took over the family business on his father's death, he was only 18 years old. If he was raw in management skills, he had the Meilland eye for new roses, and quickly acquired the business sense to match. A hybrid himself, of Meilland and Paolino parents, he combined the two families' horticultural interests and plunged his company into the cut-flower business as well as the garden trade. Today its sales are equally divided between the two.

In his direction of the Meilland rose empire today, Alain also manages to combine a traditional passion for rose research with a very modern absorption in market research. "So many rose breeders are good at the hybridizing, but not so good at the commercial aspects," he says. "You need both."

The commercial factors weigh heaviest in the search for new cut-flower varieties. At the Meillands' research center in Antibes, spilling down from Boulevard Francis Meilland to the edge of the blue Mediterranean, are acres of greenhouses where seedlings are nurtured and evaluated in a search for a rosebush which will produce buds prolifically, especially in winter, with suitably long, elegant stems topped by a tight, many-petaled flower which will open slowly and last 15 days in water, both foliage and petals staying crisp in texture. That the bud should also be beautiful in color and shape is a consideration, but it is only one of many.



Alain Meilland, at the Antibes center his grandfather cleared from forest, has acres of glass greenhouses.

In cut roses, beauty lies mainly on the balance sheet. How many blooms a grower can expect for every gallon of heating oil is the vital factor. There are approximately 2,500 kinds of roses today, but a mere ten varieties represent 80 percent of the cut-rose business. The needs of the trade are almost too precise, the investment gamble immense. Standing in his greenhouses, ankle deep in rosebuds picked from 3,000 varieties that will probably never be seen by the outside world, Alain Meilland explains, "Either you have a Sonia [a best seller he named for his daughter (p. 47)] or you have nothing. Public taste for a cut flower is less important than the technology. If at any stage in the growing the cultivator hits a problem, the rose will be abandoned." Though Meilland admits he tries never to get too fond of any one rose, he has high hopes for a new pink-and-white bud, its petals frilled at the edge in deeper pink, so far known only by its number (p. 53). "I love it, I love it," he cries.

Meilland has opened a rose farm in Seville, Spain, the largest in Europe, which produces four million rosebushes a year to sell to growers. To complete his mastery of all possible facts about the performance of his roses, Meilland also runs Rosaflor, a company in France and Holland growing and selling flowers from its bushes to the florist market. "To be a successful breeder of greenhouse roses, you must grow greenhouse roses," says Alain Meilland. "It's not the money we make. It's the money our customers are going to make. And we need to move them on. A wholesaler who has a successful rose like our Baccara may say 'Why should I risk a new variety?' But we have to prove to him that where Baccara produces 18 blooms per bush, Visa or Red Success produce 25 to 28."

Meilland's dearest wish is to get the United States to buy cut roses in the same way that Europeans do, as part of the weekly house budget. "I stopped the car one Friday evening to buy flowers on the way home,

and an American friend who was with me said, 'Have you done anything wrong?' " Alain Meilland recounts with relish. "To an American, flowers are taken home as an apology. Here flowers are part of our life. But supermarkets are beginning to stock cut flowers in the United States, a sign that the market is changing."

In creating outdoor roses, the field of experiment is just as wide but breeders are looking for entirely different characteristics. "We are trying to push out the frontiers, not only in discovering new shapes and new colors," says Alain Meilland. "We want to produce new types of roses for new landscape uses." On Meilland's Saint André experimental estate, west of Antibes, some half a million plants are raised for crossing, for grafting, for reference and as seedlings. "In making a new rose, we follow our imagination," says Alain, "and half the time we are wrong. But it's like children, every seedling will be different, and you can never produce the same seedling again. So to destroy a rose is a serious decision." Every year Alain Meilland and Jacques Mouchotte, the 27-year-old head of the garden-rose hybridizing program, raise a population of 100,000 seedlings from their previous season's crosses.

At the end of the first year, they save only the 20,000 best plants. At the end of three years, a mere 1,500 of these young roses will be left, after further selection for hardiness, ease of flowering and the capacity to graft well. From then on the best 100 will be dispatched to trial grounds in the United States, Spain, Denmark, Germany and Great Britain. Finally, by the ninth year the top 30 will be blooming in test grounds of all the Selection Meilland countries.

Only on the tenth year will a rose be chosen, from the last three or four, as a Meilland introduction. In all the eliminations after the fifth year, a panel of judges from several countries is involved, and national tastes vary. In the United States dark red and orange colors are most admired; in northern Europe, yellow; in Latin countries, where yellow may look pale, pink. But through all this vast program, the imagination of the breeder is crucial. The cross-pollinations are not random. "You've got to have a very precise idea of what you are looking for," says Jacques Mouchotte. "Francis Meilland sowed 20,000 seeds from one particular cross because he thought it was a good cross. One of those seeds produced Baccara."

Alain Meilland *has* a very precise idea of what he wants to breed for the future. "Of the 500 varieties sold in America," he says, "150 are nontraditional roses, in other words, hedges, ground covers, shrubs and miniatures." The biggest expansion in the rose market, he believes, will come from using roses as mass plantings in urban landscaping, for new labor-saving display on highways and in public gardens. To avoid any idea that these new plants will need pampering the people at Star Roses do not call them roses in their catalog. One example is a tall free-flowering shrub named Carefree Beauty, which is never referred to as a rose, and is out to compete with the flowering shrub market. "The United States is all for Green Survival," says Meilland. "How I hate that word green."

Looking back on the history of flowers, Meilland observes that the rose has come a long way. "Eighty years ago there were no yellow hybrid teas," he says, "but there is going to be as much change in the future as we have seen already. A lot of our rose ideas may be like Concorde, perhaps too early, but they will be used to develop the roses of the next century."

Hybrids that haven't made it, this bouquet of rejects was picked by Alain Meilland for transitory beauty.

A rose of the future, this hybrid may be the Meillands' "new Sonia." At U.S. trial gardens it is No. CP7207.

Article and photographs by Lucy Lim

Thousands of cave Buddhas hint at old Chinese power play

More than 51,000 ancient carvings cram 53 caverns at Yün-kang and tell story of a cultural upheaval 1,500 years ago

I have never experienced a mirage in the desert. But when I was approaching the Northern Wei Buddhist cave temples at Yün-kang in Shansi province on an archaeological trip to China, the excitement I felt was much akin to such an experience.

The journey by car from our hotel in Ta-t'ung city to the outskirts of Yün-kang, a distance of about ten miles, was mostly monotonous. We had already traveled from Peking for about two hours through dry, dusty, scantily populated country—the loess land of north China which has a distinct desert flavor. We saw few signs of human activity. Occasionally, trucks loaded with coal passed us on the way, and our guide explained—in a mixture of Mandarin and the local dialect—that where we were traveling had long been a coal-mining district now rapidly become industrialized. Here and there on the roads we also saw mule-drawn carts.

The landscape was barren and desolate. It seemed to stretch endlessly. Then, quite suddenly, we sighted in the distance the range of mountains called the Wu-chou Shan. Colossal statues of Buddha appeared to be protruding from the side of the mountain. Caves and niches formed dark patterns of irregular size and shape in the sandstone cliff, a spectacular sight against the pale blue sky. In the foreground, we could see faint outlines of wooden temples with pointed eaves and tiled roofs. When we finally drove into the courtyard we found a few Japanese tourists mingling with local Chinese, and Yün-kang, the famous site that I had known only as a two-dimensional view, came alive.

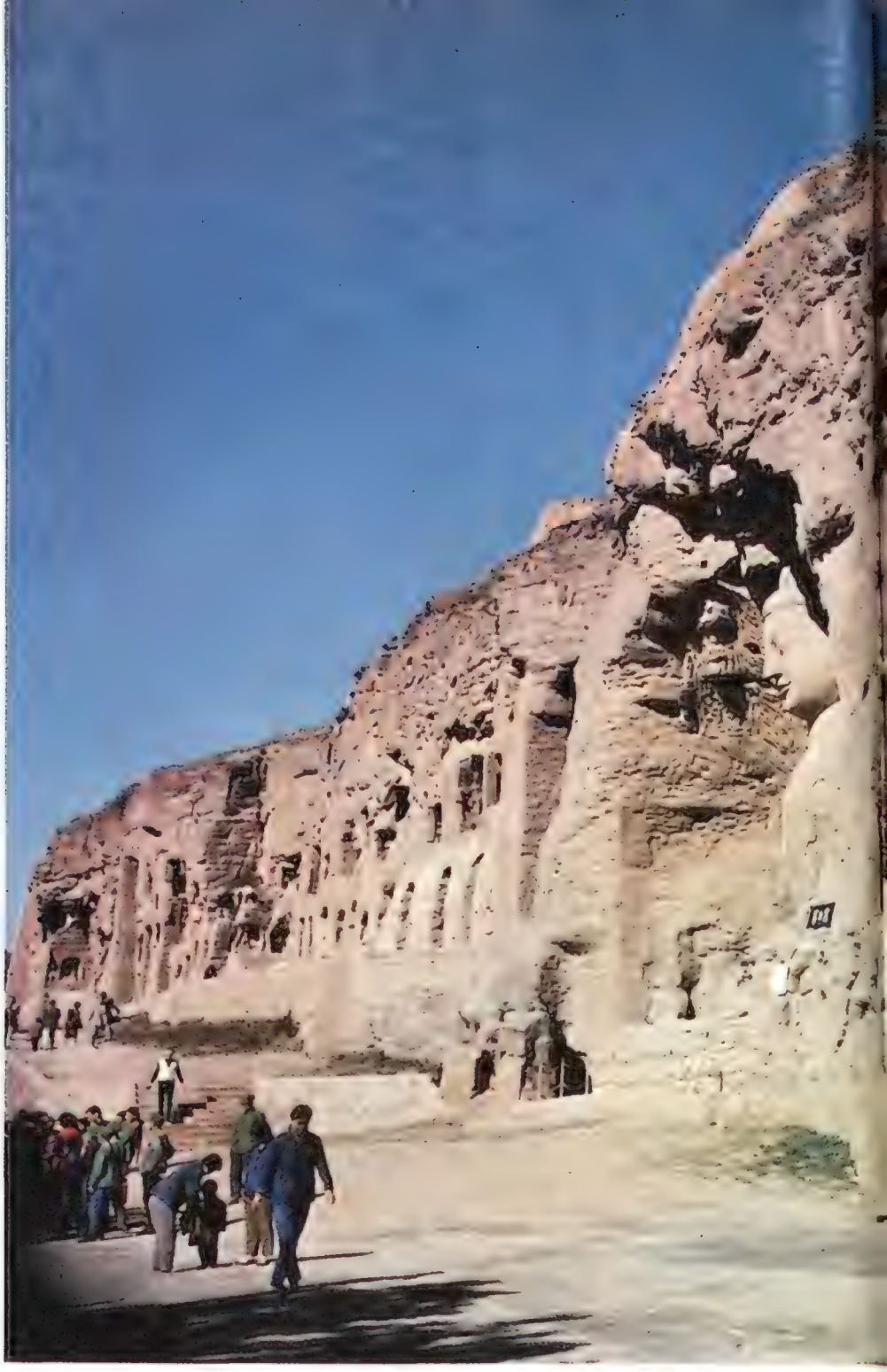
In the early part of this century, French and Japanese archaeologists published black-and-white photographs of the Yün-kang caves and their statues. For a long time, while China remained inaccessible to most visitors, these provided the only visual reminder of this important archaeological monument for historians of Chinese art.

Hand of a giant Buddha catches the sun outside a shadowed cave. His garment's pleats are lined with tiny figures illustrating scriptural reference to a multiplicity of Buddhas.

It was ironic that I had been so preconditioned by pictures that when I actually saw the site *it* seemed unreal. A world of incredible beauty and vast dimensions was revealed. The statues are huge; the ornamentation that surrounds them extraordinary. No picture could possibly evoke the splendor of the caves, the richness and variety of their sculptures.

The Yün-kang caves were excavated in the fifth century A.D. by a foreign nomadic tribe called the T'o-pa (p. 57), which ruled north China at that time as the Northern Wei dynasty (386-534). Such foreign nomads (of Mongol, Tungus, Turkic and Tibetan descent), settling on China's northern borders, had long menaced Chinese security. To guard against their incursions, segments of the Great Wall were consolidated in the third century B.C., with various sections later added

Buddhist caves of Yün-kang

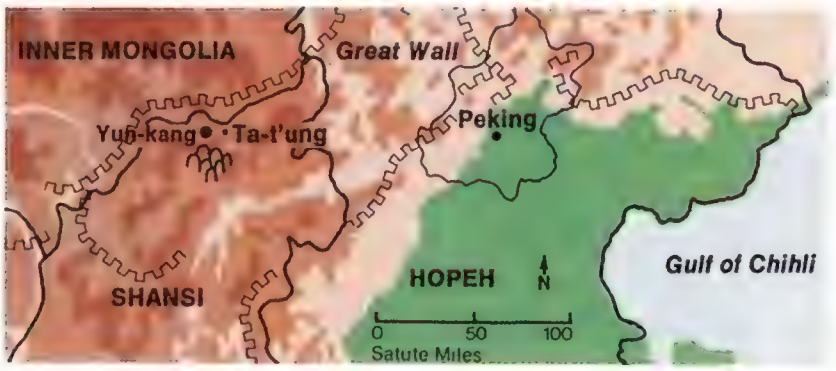


Caves line the Yün-kang cliffs dwarfing humans at left. Carved figures—in the

to it. Internal strife following the fall of the great Han empire in the third century A.D. gave the nomadic tribes a chance to penetrate deeper into the central plains. By the fourth century their leaders held such powerful sway over north China that the former Chinese rulers retreated to the south of the Yangtze River, there to reestablish a Chinese court under the new dynastic title of Eastern Chin at present-day Nanking. Thus was the country split, north and south, not to be reunited for two centuries.

Not much is known of the T'o-pa. The name has been interpreted as "lord of the soil," and some texts refer to them as "braided heads" because of their hairstyle. Scholars disagree as to whether they were racially closer to Mongols or Turks. They lived mainly by raising cattle and probably originated in what is now northern Mongolia and northern Manchuria. They expanded into the Gobi Desert and began plundering settled lands on China's frontier.

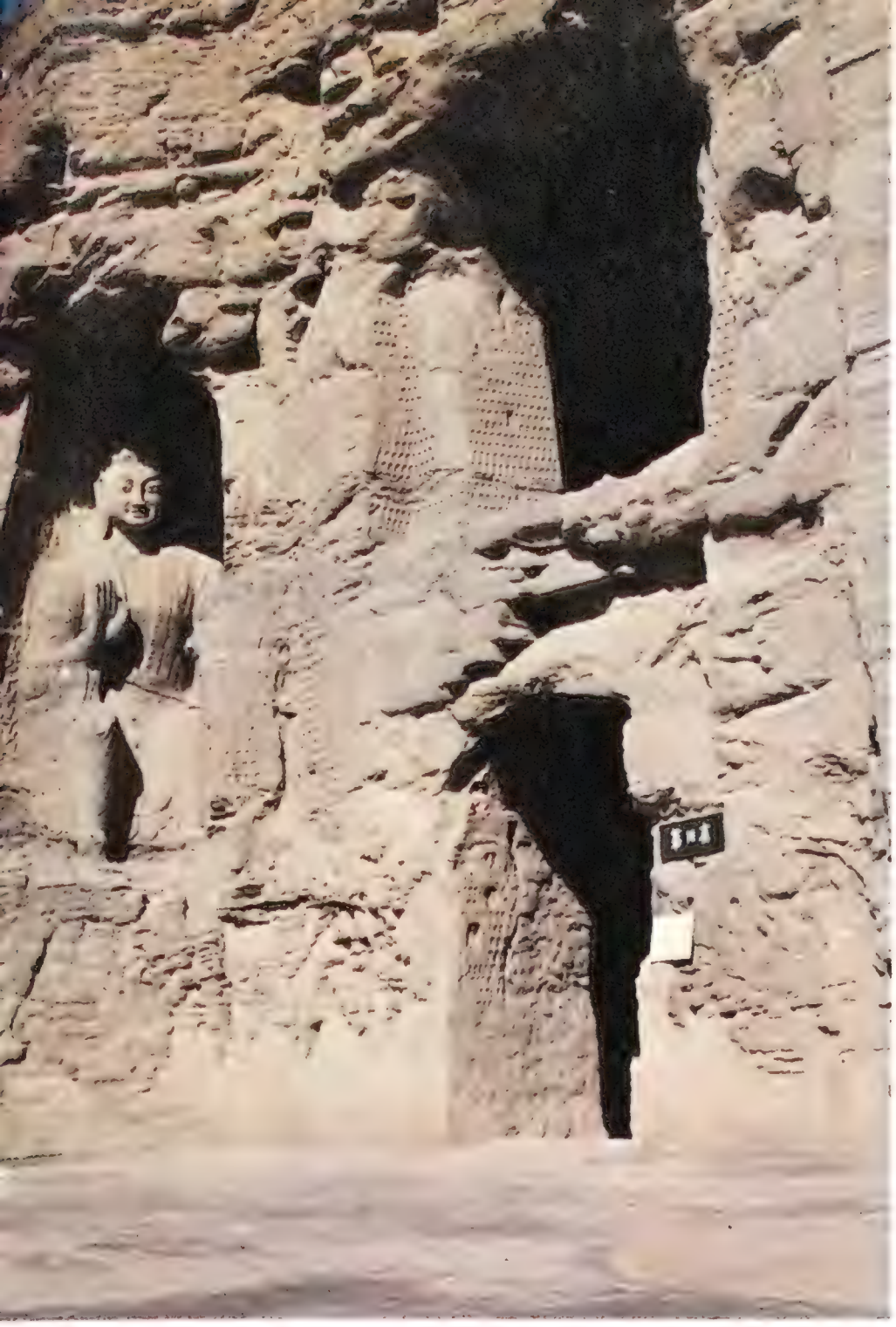
Around the third century A.D., the T'o-pa migrated southwest to establish a state called Tai in what is now Inner Mongolia. This nomadic tribe aided the Chinese Emperor in combat and acquired in return extensive territory—the northern half of today's Shansi province.



Yün-kang is just within the curves of the Great Wall which once protected northern Shansi.

Eventually, the T'o-pa gained supremacy over all in the area. Tai was renamed Wei, and its leaders demolished their opposition and became the rulers of all of north China. Since the T'o-pa leaders were soldiers and knew little about bureaucracy, they patterned their government after Chinese precedents. They drew their civil officials from those conquered Chinese who had remained in the north. A close collaboration grew up between T'o-pa rulers and Chinese subjects. This led to a racial and cultural mix. The T'o-pa people readily absorbed influences from foreign as well as Chinese sources.

The T'o-pa benefited from contacts with India and Central Asia, for, while completing their conquest of north China, they annexed what is now, roughly, the province of Kansu—China's northwest corridor to western regions and route to India. Indian monks had



niches of the cliffs—can be seen in
entrance to nearest cave, one of the oldest.

settled there to preach Buddhism, and when Kansu was taken over many were moved to the capital, where they continued to spread Buddhism with fervor.

Fifty-three main caves (all numbered) have been preserved, in addition to numerous smaller caves and countless niches. The images in them are said to total more than 51,000, the largest Buddha being nearly 56 feet tall.

Largest and best preserved are the caves numbered 1 through 20; they are also considered to be the most important. I confined my investigations mainly to this group, which, while better preserved, have also suffered. Time and weather have ravaged them. The roof and front walls of cave number 20 have entirely collapsed (p. 62) exposing the three Buddhas to the elements. Some caves, moreover, have been looted, their sculptures chopped off and sold to art dealers. You may find some of the missing sculptures in museums outside China. A particularly elegant bodhisattva is on display at the Metropolitan Museum of Art in New York.

Pottery figures in Northern Wei tombs follow
T'o-pa tribal dress style. Caps hide hair.

A tour of the caves shows that they differ in form and also in the type of deity that they contain. Sakyamuni Buddha is the most frequently seen main image. But other Buddhas also appear, together with their attendants and a host of celestial beings, devas, Yakshas, apsaras, musicians and worshipers (pp. 60-61).

The sacred scriptures speak of a multiplicity of Buddhas and their manifestations in time and space. Here at Yün-kang, miniature "thousand Buddhas" (a visual equivalent of the scriptures) were duplicated over vast areas of the wall surfaces, inside and out. In one unusual instance they are depicted on the robe of the standing Buddha in cave 18, and they may be seen on the sleeve in profusion (p. 55). A bewildering variety of decorative motifs enriches the sculptural details—the lotus blossom, palmettes, flaming nimbus, undulating floral scrolls. Intertwined dragons surmount some arches, while others terminate in animal and bird shapes. Art styles point to Hellenistic, Gandharan, Indian, Iranian and Central Asian sources as well as to the traditional Chinese.

Lucy Lim is a New York-based art historian and free-lance writer. In 1978 she received from the National Endowment for the Arts a writing fellowship for her essays on Chinese art.

Each in recess of its own, small Buddha figures, neatly aligned, cover vast surfaces of the interior and exterior walls at the older caves—numbers 16 to 20. Buddhas usually

The earliest caves, numbers 16 to 20 (dating back to approximately 460) are simply hollowed-out spaces to house colossal sacred images. They are oval, with walls curving upward to form a domelike ceiling. Inside each, the central Buddhist figure, varying from 25 to 45 feet tall, occupies almost the entire cave and its impact is quite staggering. In some caves of this type a tunnellike passage runs behind the main statue. This allowed worshipers to walk around the icon in ritual circumambulation—the pradaksina ceremony.

The Buddhist figures in the early caves show strong links with the West. In general they are heavy and ponderous figures, full-chested and broad-shouldered, clad in monks' robes that cling closely to the body. Their style was derived from Indian and Gandharan prototypes, modified by the regional styles of Central Asia through which the imported models traveled on the caravan routes to north China. A strong sense of naturalism imbues these bulky figures, but never quite the sensuousness that characterizes Indian Buddhas. The faces are strongly modeled: wedge-shaped nose, arched eyebrows, faintly smiling mouth, long earlobes.

A very different style emerges in the Buddhas of the later caves, probably carved around 490. The most vis-

take the dhyana (meditative) position, hands resting in laps. Niches average a bit more than half a meter in height. Multiplicity in time and space is a precept of Mahayana scriptures.

ible change is in the costume. Instead of the monk's robe covering one shoulder or sometimes both shoulders, a Chinese garment now swathes the Buddha figure as in Caves 6 (pp. 62-63) and 11. The garment, arranged in a series of flat broad folds, billows out in a beautifully orchestrated cascade of pleats and flares, the ends terminating in S-like scallops and sharp points. It is a slimmer, more elegant image. The new esthetic accent is on elongation, sweeping curve, formal rhythm. A Chinese sense of style, one that is essentially linear rather than sculptural, has prevailed over the foreign models.

The design of the later caves is more elaborate. Some are divided into an outer and a main chamber, being square or rectangular in plan. A few still retain the colossal statue as the central image, but a new innovation of a stupa (a pillar containing a relic chamber), now replaces this central image. This stupa, which is particularly sumptuous in Cave 6, extends all the way to the ceiling; Buddha-filled niches cover the four sides. It was probably intended for the monks to walk around in ritual worship.

In Cave 6, which represents the zenith of the Buddhist art at Yün-kang, the carvings are especially or-

Two half-naked dwarfish Yakshas support the decorative pillar with Buddhas in Cave 9.

Four celestials on underside of entrance arch leading into Cave 9 hold up the cintamani,

nate (pp. 62-63). The four walls and the stupa, divided into two stories, are lavishly covered with niches, architectural pillars and sculptural reliefs depicting scenes from the life of Buddha. Traditional Chinese elements —the pagoda form for example—are now predominant in the decorative motifs.

Viewing the art in its historical milieu, some have tried to explain the change in terms of the complex cultural forces at work in Northern Wei society. The art styles, they claim, reflect conflicting forces between foreign and Chinese elements. The change to a Chinese fashion thus signifies a resolution of the cultural tensions as Northern Wei society gradually became more and more Sinicized.

For even though Buddhism was firmly implanted, there had been outbursts of opposition from the orthodox Confucianists. These gentry and literati, upholders of the traditional Chinese system, continually strove to persuade the alien rulers to reconstitute a government based on the Confucian system in which their class would have the key roles.

A power struggle between Buddhists and Confucianists was inevitable. At the instigation of a wily Chinese adviser to the throne, the T'o-pa ruler was persuaded

a magic jewel known for the granting of wishes. Figures resemble the Yaksha of Indian art.

to carry out a drastic persecution of the Buddhists in 446. Practice of the religion was forbidden. Many Buddhists were killed, the religious icons destroyed.

But the foundation of Buddhism was apparently far too deeply entrenched to be disrupted by this temporary upheaval. Soon after, in 452, the new T'o-pa emperor ordered Buddhism to be revived. Perhaps as acts of expiation for the persecution, Buddhist temples and images were constructed on a large scale.

The most impressive undertaking was the Yün-kang excavations, said to have been begun in 460 under the supervision of the newly appointed superintendent of monks, T'an-yao. Five caves were opened at first. In each was carved a huge Buddhist statue intended, we think, to honor five Northern Wei monarchs. These (Caves 16 to 20) are usually known as the "five caves of T'an-yao" and show strong foreign influence. Since the Northern Wei capital was moved southward to Lo-yang in 494, major work ceased at Yün-kang, though a few minor caves continued to be carved even after the fall of the dynasty in 534.

The theory that the Yün-kang styles simply reflect the cultural changes of the era would seem sound enough. But another theory, propounded at a time

Brightly painted west wall inside Cave 13 bears little relation to the original Indian-influenced art.

when Northern Wei archaeological evidence was scarce, suggested an influence from south China.

Chinese archaeological discoveries of recent years have shed some light on this mystery. Among the finds excavated are fragments that point indeed to south China's role.

But much of the material needs to be studied and analyzed further. Yün-kang not only provides ample evidence for comparative study, but it has also raised broader issues that challenge further investigation. The fragments of evidence, when pieced together, will enhance our understanding of an obscure but important period in Chinese history.

Indian-style Buddhas of Cave 20 (above) seem to grow from the cliff. They contrast with Cave 6 Buddha (right) which has sumptuous look of later Chinese influence—zenith of Yün-kang art.

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The Pennsylvania Academy of the Fine Arts

In *The Artist in His Museum*, Peale displays with the avowed purpose of education. Peale Long Room of his museum, world's first started the painting, son Titian finished it.

By Lillian B. Miller

The Peale family: a lively mixture of art and science

A record of the artist and his many gifted children is recorded on microfiche by the Smithsonian's National Portrait Gallery

His children, like the institutions he founded, were "tender young plants," and Charles Willson Peale, artist, museum keeper and patriarch, nurtured them all so that they would grow in a proper—that is, natural—direction. As a result, the Peale family has become one of America's most famous clans, as interesting in their achievements as the Adamses or Jameses were in theirs. The publication in microfiche of the Peale Family Papers this spring by the Smithsonian's National Portrait Gallery throws new light on this extraordinary dynasty.

Charles Willson Peale's life bridged two centuries, but 18th-century ideals and practices influenced it greatly. Born in 1741 in Queen Anne's County in the royal colony of Maryland, he died in Philadelphia in 1827—just before his hero Andrew Jackson took over the Presidency and gave his name to a new democratic age. During his long life, Peale painted more than a thousand portraits and miniatures of men and women of the Revolutionary generation. He also delivered numerous lectures and published treatises on natural history, health and domestic happiness, helped to found institutions for the encouragement of the arts, created in Philadelphia the first scientifically organized museum to be open to the American public on a regular basis (opposite), and educated his numerous progeny in such a way that most of them continued his interests in art, science and museology.

Thrice widowed (he was courting a prospective fourth wife when he died at 86), Peale sired 17 children, 11 of whom survived to adulthood. The first four, all of whom died in infancy, were given unexceptionable Anglo-Saxon names. With the fifth he began naming them after famous artists and scientists: Raphaelle, Angelica Kauffmann (an 18th-century Swiss-born painter), Rembrandt, Titian Ramsay I (he died at 18), Rubens, Sophonisba Angusciola, Rosalba Carriera and Vandyke (both of whom died before the age of two), Charles Linnaeus, Benjamin Franklin, Sybilla Miriam, Titian Ramsay II and Elizabeth DePeyster (with the last his second wife, Betsy DePeyster, finally revolted and said, in effect, no more outlandish names).

It is not strange to include a family among Peale's many achievements. In Colonial America, learning took place within the context of a total household environment. The home was the source of attitudes, values, manners and vocations passed from one generation to another. As an 18th-century father, Peale was as concerned for his children's education as he was for the shape of his museum or the quality of a portrait—perhaps more so. Educated in the writings of French and English Enlightenment philosophers and scientists, he shared Rousseau's conviction that children should be led "to the paths of Virtue with a Chain of Flowers," that education provided the answer to most of society's ills. Just as he planned his museum so that its organization as well as its exhibits would instruct the public in nature's order and harmony, so he created a family structure that would allow his children to develop freely within a discipline imposed by an understanding of nature's laws. Typically, Peale presented his third wife (p. 69), early in their marriage, with two books to prepare her for the role of stepmother. One was a collection of devotional meditations relating the wonders of nature to the wisdom and power of God. The other was a volume of Robert Donovan's *Natural History of British Insects* which he chose, perhaps, to demonstrate the fineness of natural design—to show how even the smallest creatures are beautiful in structure and function.

Peale was convinced that individuals could use their reason to understand what was good and to act accordingly. In his autobiography, compiled a year before his death, he wrote: "Shame if properly seasoned is a greater scourge than the birch." Parents, he felt, should teach by example, sharing their children's interests while involving them in family activities. Just as nature presented models of social organization and cooperation among animal and plant life, so parents, by behavior and attitudes, presented models that any child with "reasoning faculties" could follow.

Historian of American Culture at the Smithsonian's National Portrait Gallery, the author is editor of the microfiche edition of the Peale Family Papers.

Charles Willson Peale and family

Peale's sense of familial responsibility began before he reached his tenth birthday. His father, a country schoolteacher in exile from England for embezzling post office funds, died and left the family almost penniless. As the oldest child, Charles was required to help his mother, who became a seamstress. At 13 he was apprenticed to a saddlemaker, and at 20 he opened his own shop, married and took on as helper his younger brother James. Later, when he turned to portraiture, he taught James the art of painting in miniature, believing that anyone could learn to paint if he or she understood the rules. In his domestic portrait, *The Peale Family Group* (c. 1772), we see him teaching another brother, St. George, how to draw (opposite).

Peale's enterprises frequently turned into games. When he decided to learn French in 1774, he had his family and students join him in his studies around the candles during the winter evenings. Fines were paid by those who made the mistake of speaking English. "An accident, or a joke," he later reported, "produced many fines, and the amount went to furnish cakes for the company. Time passed pleasantly on . . . as is always the case with those who have much to do."

Another game helped to move Peale's exhibits from his painting gallery to the Hall of the American Philosophical Society, the site of his new museum. Aware that all boys love a parade, he enlisted the neighborhood youngsters into a "cavalcade." Each was entrusted with a specimen appropriate to his size. Only a "young alligator" was lost and one glass broken, and the parade provided effective publicity for the museum, soon to be one of the most influential of its time.

Peale's children enjoyed the same combination of fun and work in their home. In their father's painting room they were given a rigorous course in drawing; in his carpentry shop the boys learned how to handle tools and work in wood. As they grew older, Peale's seven sons worked in the museum, helping with the machinery, gathering specimens and taking care of their preservation.

When the family later moved their living quarters to Philosophical Hall, the children received a social experience. Mechanics such as Isaiah Lukens and Burgess Allison came to show off their inventions; Alexander Wilson participated in their pursuit of natural history and shared their musical and literary interests (as well as their enthusiasm for the revolutionary Tom Paine); visiting French scientists loftily discussed nature's wonders and the benefits of free thought.

One of the most exciting events for the Peale family was a farmer's discovery of mastodon bones in Ulster County, New York, in 1801. Peale hurried to the site and bought the bones and the right to dig for more. Returning with equipment and accompanied by Rembrandt, his second-oldest son, he exhumed the heavy bones of the mammoth creatures—a scene later recorded in his painting, *Exhuming the Mastodon* (pp. 76-77). One of the reconstructed skeletons brought crowds of curious visitors to the museum; the other gave Rembrandt and his younger brother Rubens an opportunity to travel in Europe exhibiting it.

Alert to any opportunity to bring his children forward, Peale in 1795 took advantage of his warm friendship with President Washington to arrange a sitting for 17-year-old Rembrandt, who had just been commissioned to paint the great man's portrait. Then he decided to join Rembrandt in the painting room and, while painting what would be his seventh portrait of Washington, also engaged him in conversation to ease his shy son's embarrassment. At the second sitting, Peale's brother James and eldest son Raphaelle joined the group, thus giving rise to Gilbert Stuart's famous pun that Washington was "in danger of being *Pealed* all around."

Father and son see Washington differently

The sittings resulted in two interesting portraits (p. 73). Intent upon producing a good likeness, Rembrandt painted a direct and vivid—almost brutal—portrait of an aging subject as seen through young eyes. The elder Peale, filled with sentiment for an old friend and a sense of Washington's meaning for the nation, softened and idealized his subject, presenting him as the embodiment of republican virtue: dignified, assured, benevolent.

Pressures within the crowded Peale household must have created problems for some of the youngsters. Those who temperamentally resembled their father probably felt little tension. Rembrandt (1778-1860) was fascinated by his father's activities in the painting room, carpentry shop and museum. Together father

The New-York Historical Society

Charles Willson Peale painted *The Peale Family Group* c. 1772 and put himself in it, bending over brother St. George (left), who is sketching their mother (far right). Brother James smiles; above him stands sister Margaret Jane. Charles' first wife, Rachel, is in center with baby girl. Sister Elizabeth Digby sits next to mother. Peggy Durgan, nurse to five Peale children, stands.

INA Corporation Museum

Betsy DePeyster was C.W.P.'s plump, willful second wife. This 1795 miniature is by brother James.

Museum of Fine Arts, Boston

Hannah Moore, a gentle Quaker, was Peale's third wife. He painted this portrait in 1816.

Charles Willson Peale and family

The Detroit Institute of Arts,
Dexter M. Ferry jr. Fund

Second son Rembrandt, to Peale the most talented, did this self-portrait in 1828.

Private collection—Kennedy Galleries, Inc.

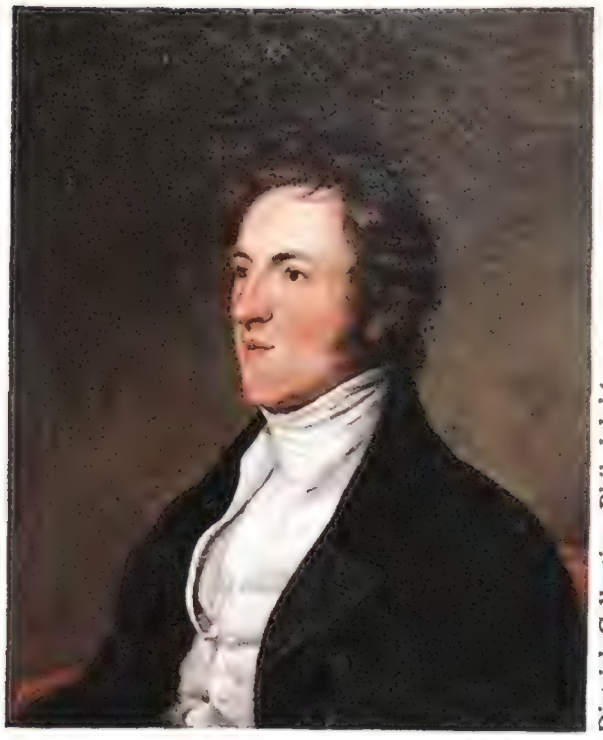
Peale painted Angelica Kauffmann Robinson, eldest of four daughters, and husband Alexander. She was named after famous 18th-century Swiss artist.

The Philadelphia Museum of Art, George W. Elkins Collection

In Peale's famed trompe l'oeil *The Staircase Group,* oldest son Raphaelle climbs while Titian I, who died at 18, peeks. Painting was set in museum doorway with a real wooden step projecting beneath it. George Washington, passing it, is said to have nodded to the boys.

Collection of Mrs. Norman B. Woolworth

Rembrandt painted his younger brother Rubens, with America's "first" geranium (1801) as a tribute to Rubens' deep interest in botany.



Dietrich Collection, Philadelphia

Charles Linnaeus Peale, C.W.P.'s wayward son, chose soldier-adventurer's life.

The Pennsylvania Academy of the Fine Arts

Benjamin Franklin Peale, next-to-youngest son, was a mechanical engineer.

and son read Matthew Pilkington's *Gentleman's and Connoisseur's Dictionary of Painters* (1770), so vital a volume in the Peale household that important family dates were recorded on its flyleaves. Captivated by the romance of the artists' lives, Rembrandt (opposite, top left) thought of himself as participating in a great Renaissance tradition. Perhaps one of his greatest disappointments would later be the fact that the American public did not look upon artists with the same awe.

Rembrandt took advantage of every opportunity to study art. At eight he began to draw; by 13 he had painted a self-portrait. He became a student at classes organized by his father and other Philadelphia artists and also studied the chemistry of pigments at the University of Pennsylvania's new medical school.

Before leaving for Europe with Rubens to exhibit the second mastodon skeleton, Rembrandt painted the charming picture of his younger brother holding a geranium plant (above). Later study in France and Italy contributed to his development of a romantic style that would be praised by French artists and presumably Napoleon himself. While abroad, he perfected a painting technique and palette that filled him with enthusiasm. "My tints," he wrote home in 1808, "surpass the finest complexions and equal what the imagination can conceive." The elder Peale agreed. When he returned to painting landscapes and portraits late in life, he adopted his son's innovations.

Rembrandt's driving ambition was to paint a perfect interpretation of Washington and he gave careful study to the extant portraits. Then, in a three-months'

The American Museum of Natural History

Titian Ramsay Peale II, youngest son, became a naturalist-illustrator.

Rembrandt Peale's *The Court of Death* was hailed as a "Great Moral Painting" as it toured

frenzy of effort, he produced a composite portrait which he and many of his contemporaries believed truly represented the first President. Painted in 1823, it now hangs in the restored Old Senate Chamber of the U.S. Capitol Building. He made many replicas of this composite, encasing some of them in a painted stone surround, which earned them the name "Porthole" Washingtons.

Rembrandt's *Court of Death* (1820) received widespread acclaim. During its first 13-month tour of American cities, the canvas (above right) earned more than $9,000 in admission receipts and clergymen preached its moral message. But the Peales were never practical businessmen, and Rembrandt's life as founder and proprietor of the Baltimore Museum (now the Municipal, or Peale, Museum) and as portrait painter was marked by struggle.

In later years, Rembrandt published essays in the *Crayon*, one of America's first art journals, and presented illustrated lectures on Washington's portraits which brought him notice as one of the country's oldest living artists. But the full extent of his achievement cannot be measured until his work has been carefully catalogued and evaluated.

Rembrandt's older brother, Raphaelle (1774-1825) was the tragic figure in the household. Full of impish humor (p. 70) and artistic genius, he never was able to earn a living by his art. In the absence of commissions, he turned his imagination to helping his father in the invention of stoves, fireplace improvements and wooden bridges, and in the mounting of the larger animals in the museum. In 1803, John I. Hawkins, the English inventor, allowed Raphaelle to take his physionotrace—a profile-cutting machine—with him on an extended Southern trip. The device was a huge success and Raphaelle made a small fortune cutting thousands of profiles. But he spent it quickly, and for the most part he, like other family members, faced constant financial crises.

As Raphaelle's hands became more arthritic (perhaps, he felt, from frequent immersion in the strong arsenic solutions needed to preserve his father's specimens) and, as a combination of alcoholism and gout made steady work impossible, he grew more dependent on his father. His major artistic expression became the still life, which he painted with such "exactness of finish" as to convince his father that if the young man could develop "confidence" and paint portraits, "no artist could be [his] superiour in that line." "They must feel happy," Peale wrote to his troubled son, "who communicate happiness to their near and dear connections, and thus draw on them the esteem and honor of a deserving public."

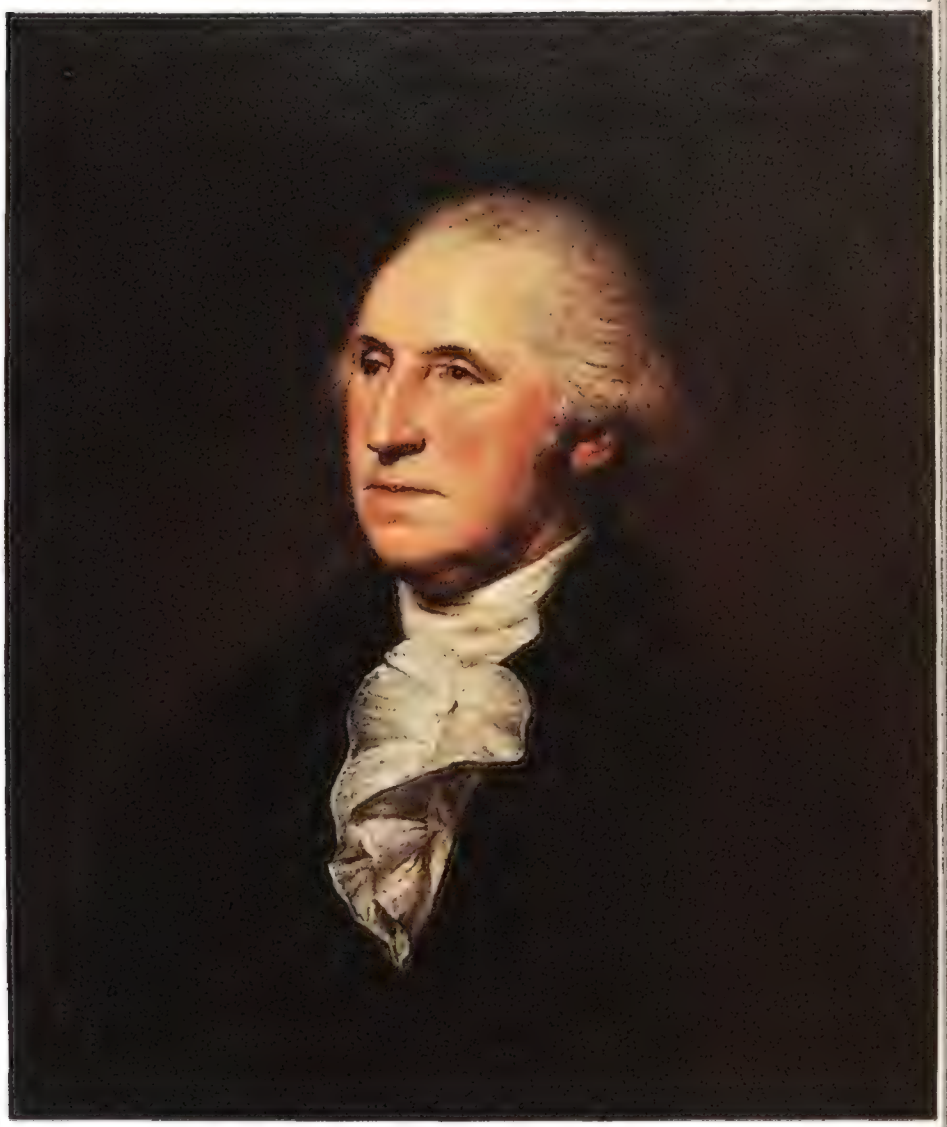
Raphaelle never became "celebrated by his pensil," but today his few portraits still extant and his exquisite still lifes are treasured.

Handicapped since childhood by poor eyesight, Rubens Peale (1784-1865) never learned to paint formally. Instead, he turned to botany, mineralogy and museum management. In 1810, when the elder Peale decided to retire to a farm in Germantown, he left the Philadelphia Museum in Rubens' hands, in return for a yearly allowance. Rubens continued the educational mis-

The Detroit Institute of Arts, gift of George H. Scripps

the country, illustrating the transience of life and earning more than $9,000 for the artist.

The New-York Historical Society



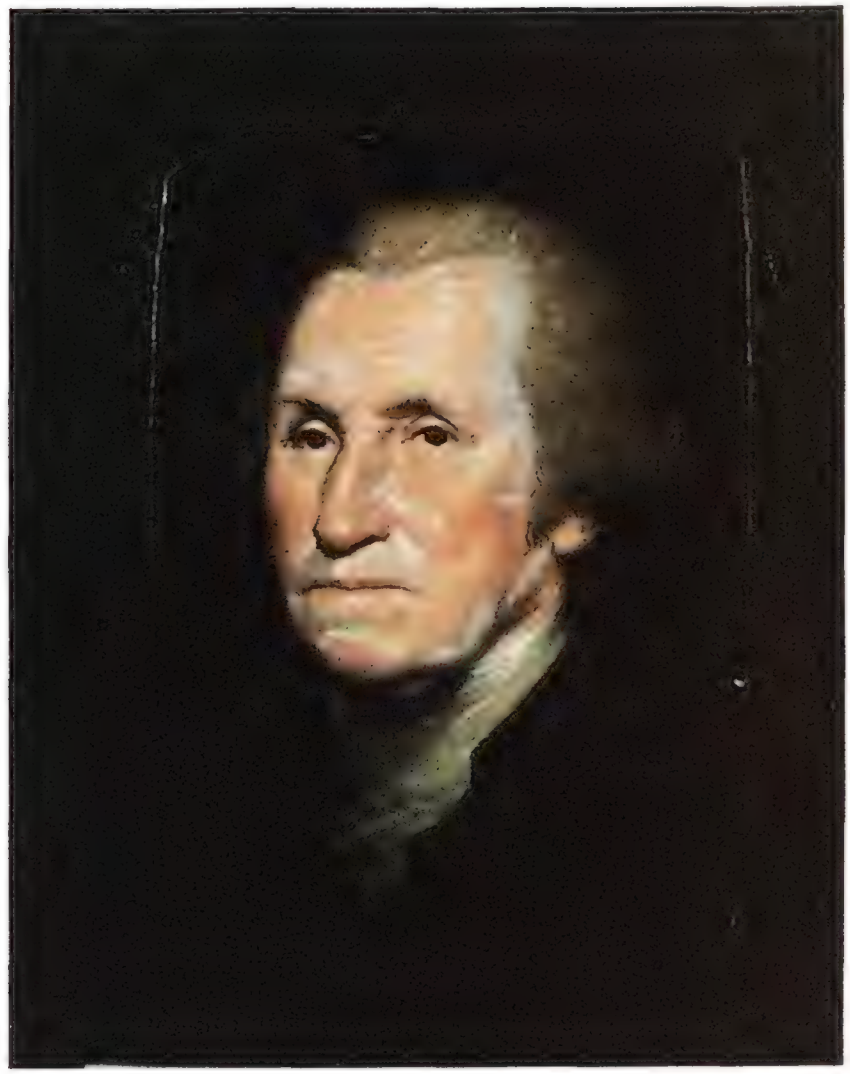
Charles Willson Peale's last portrait of George Washington idealized his old and intimate friend.

sion of the museum, but made some changes for the sake of profit. Although he introduced theatrical entertainments, his experimental demonstrations with gas, machinery and chemicals were thoroughly scientific. The art of museum keeping became synonymous with the family name.

In 1822, Rubens took over the Baltimore Museum from the less businesslike Rembrandt. Three years later, he opened a museum in New York, which spawned an offshoot in Utica. Enormously successful, the museum succumbed to the economic crisis created by the Panic of 1837. Rubens did not rail at fate; instead, he quietly retired to a Pennsylvania farm. Here he spent the next three decades growing wheat, vegetables and fruit, carrying on experiments in mesmerism and, at 80, he turned to the painting of still lifes.

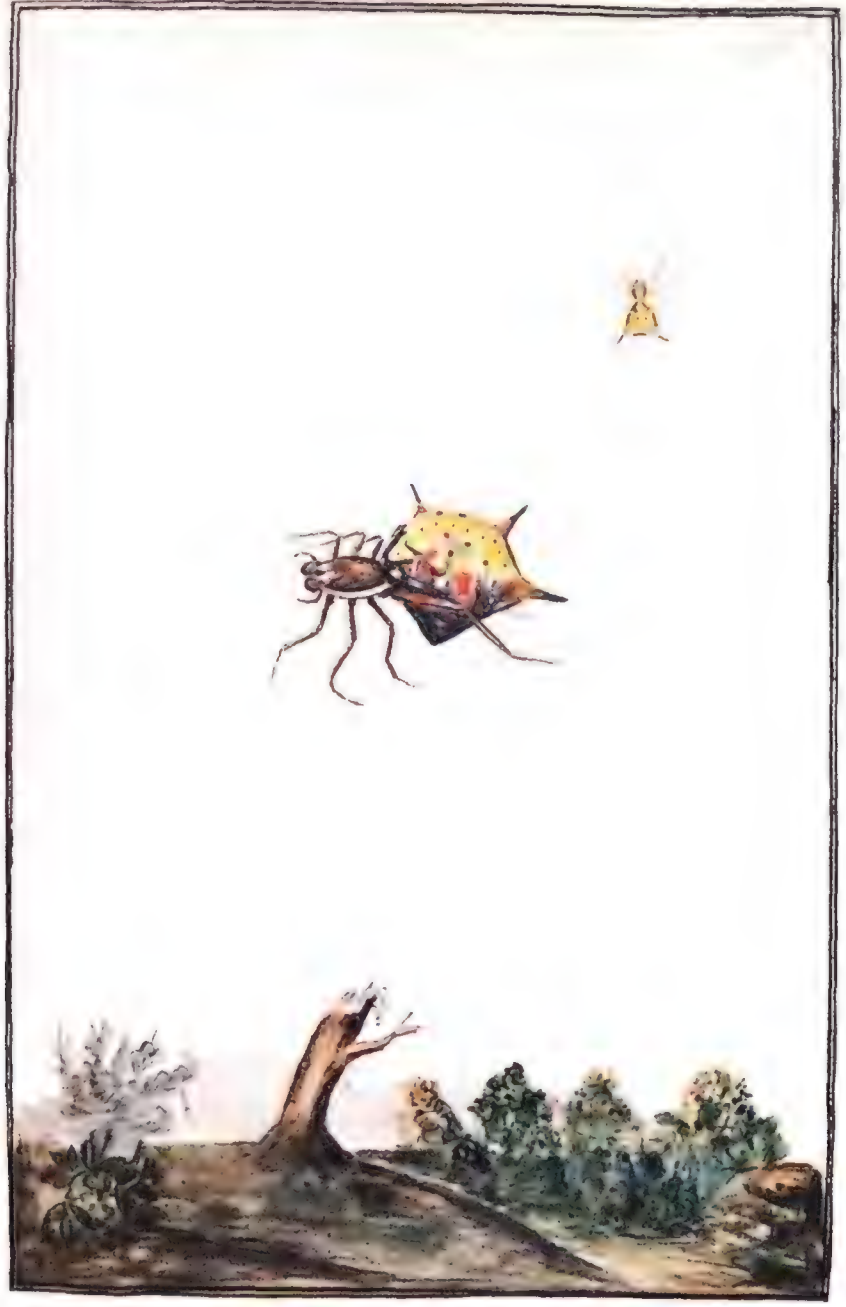
Titian Ramsay I (1780-1798) was a genius in the museum and a favorite companion of his father (p. 70). He wrote an unpublished manuscript on the art of miniature painting and was at work on a manuscript on the insects of North America (p. 74) when he died of yellow fever.

His namesake, Titian Ramsay II (1799-1885), painted meticulous watercolors of flora and fauna and served as naturalist-artist on the Long Expedition of 1819-1820 and Wilkes Expedition of 1838-1842 (p. 74).



The Historical Society of Pennsylvania

Rembrandt painted Washington at the same time—1795—and described him as looking "dismal."



National Agricultural Library, Historic and Rare Book Collection

Before dying of yellow fever, Titian I made this insect drawing, here published for first time.

Titian Ramsay II's *Lepidoptera* illustration is also reproduced below for the first time.

The American Museum of Natural History Library

In between, he ran the Philadelphia Museum in co-operation with his elder brother Franklin.

He too was a victim of circumstances when his report on *Mammalia and Ornithology* (of the Wilkes Expedition) was suppressed by Wilkes before it could be distributed and another study was substituted. Moving to Washington, D.C., to organize and arrange the expedition's collections, he was further disappointed when in 1846 he failed to receive appointment as curator of the newly established Smithsonian Institution. Two years later, he became an Assistant Examiner at the Patent Office, where he worked for a quarter-century, never rising much higher. A gifted photographer and artist, he wrote and illustrated a catalog of *Lepidoptera* of the New World (below left).

Cultural force amidst commerce

Benjamin Franklin (1795-1870) was the most mechanical and perhaps the most musical Peale (p. 71). Unlucky in a cotton-manufacturing enterprise, he co-managed the museum with Titian after their father's death. While Titian worked in the preserving room and attended to the scientific organization, Franklin specialized in mechanical exhibits. One was a large working model of a locomotive, another a huge magnet capable of lifting 300 pounds. He lectured at the Franklin Institute on new inventions and in 1833 joined the U.S. Mint, where he eventually became Chief Coiner. Here he developed many innovations.

Charles Linnaeus (1794-1832), named for the great Swedish naturalist, was the family rebel and scorned a museum career (p. 71). Apprenticed to a printer, he ran away to sea and a life of adventure in the War of 1812 and South American revolutions. His father, a pacifist despite (or perhaps because of) his own experience in the Revolution, was outraged at his son's adoption of the "murderous, miserable" life of a soldier, "whether by land or sea." He would have preferred Lin an "honest man conducting a small manufactory than . . . *the greatest general in the United States.*"

None of Peale's sons achieved great financial success; with the exception of the unmanageable Lin, they did achieve artistic and scientific renown. After the War of 1812, the country was caught up in a rapidly expanding economy. Land, industry, commercial growth captured the American imagination. But art and science were as important for the young Republic as commerce and politics. What the Peales represented in the midst of enormous materialistic concentration was a continuation of the concern for culture which the Enlightenment had fostered.

As Peale put it to Jefferson, his lifelong friend, "the attainment of Happiness, Individual as well as Public, depends on the cultivation of the human mind."

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C.W. P.'s *Exhuming the Mastodon*

Charles Willson Peale reconstructed this scene (1806) to sum up his multiple interests: art, natural history, family ties and education. Peale painted himself holding one end of drawing of mastodon's leg. Raphaelle holds other end, Rembrandt is in center, Rubens is shown in a hat. Peale also included two wives, Betsy, far left, and Hannah, next to him, among the 75 figures here.

The Peale Museum, Baltimore, gift of Mrs. Harry White in memory of her husband

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By William MacLeish

Science attempts to fit piece into jigsaw of the sea

In the violent and perilous North Atlantic, oceanographers probe a monstrous unknown as they try to learn how our weather is born

Heavy seas like these, beating across the North Atlantic, create discomforts for sailors but were

She came up the Clyde to gray Glasgow, looking small and blue under the straddling cranes of the shipyards. We watched from Yorkhill Quay in the rain. She was on schedule, turning out of the narrow channel, showing us her starboard side: the white superstructure; the stare of the crow's nest ports atop the foremast; the slim stack aft; the carapace of the fantail, with A-frames to stern and starboard and the long-necked crane nested above, the muscles for launch and recovery of heavy gear. R. V. *Atlantis II,* 210 feet long, owned and operated by Woods Hole Oceanographic Institution, is the only steam-powered research vessel in the United States.

Her business is to take scientists to sea and, once there, to give them the time, space, safety and relative comfort they need to get their work done. She spends by far the greater part of her working life on blue water out of sight of land. She had come to Glasgow to pick up a scientific party of 25 and a crew of 31, bound for a historically rough patch of ocean a couple of hundred kilometers across (some 125 miles) in North Rockall Trough, away west of the Hebrides. There, *Atlantis II* would bob and curtsy to other research ships—ships from Britain, West Germany, the Netherlands and, later, the Soviet Union. Over the sides would go miles of moorings, scores of towed and free-floating measuring devices. Up from some decks would rise tethered blimplets and weather balloons. In 14 hulls and in three aircraft cabins, machines would record, read out, break down. There would be a weekend's respite when the ship returned to Yorkhill Quay for a fresh set of scientists. Back to the "Area" for more measuring. Then up instruments and off for home, a ten-day steam across the North Atlantic.

Oceanography has turned the sea into acronym soup —IDOE, GEOSECS, MODE. The project we were joining was JASIN, for Joint Air-Sea Interaction Experiment. It was British in origin and scientific sponsorship, and it had been under development for a dozen years. Raymond Pollard, the young British oceanographer who as JASIN's scientific coordinator

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sought by oceanographers of the JASIN project,
who needed rough weather to conduct their research.

had signed up more than 50 teams of investigators from nine countries, listed its objectives in the project's newsletter: "to observe and distinguish between the physical processes causing mixing in the atmospheric and oceanic boundary layers . . . and to examine and quantify aspects of the momentum and heat budgets in the atmospheric and oceanic boundary layers and the fluxes across and between them."

Translation was provided shortly before we left Woods Hole for Glasgow by Melbourne Briscoe, 37, a charming, muscular elf of a man with a passion for good food and folk dancing. Mel is a student of internal waves—those little-understood and at times towering subsurface surges that move along boundaries between water layers of different densities. His ego is sturdy and seakindly, of the essence in his line of work, and his visual sense and imagination are strong; at one time his goal—he likes planning, paths, objectives—was to be a *Life* photographer. Mel was to be chief scientist for *Atlantis II's* JASIN cruise.

The boundary between sky and sea is so complex that it repels research, which is why Briscoe is studying it. The work is exasperating. The closer to the boundary, the more equations are apt to bolt for infinity. Following energy from air to water or water to air is the pursuit of those few who are willing to accept frustration in return for elbow room.

"The ocean holds most of the energy that many of us believe the atmosphere ultimately uses to make weather," Mel explained. "The energy comes in from

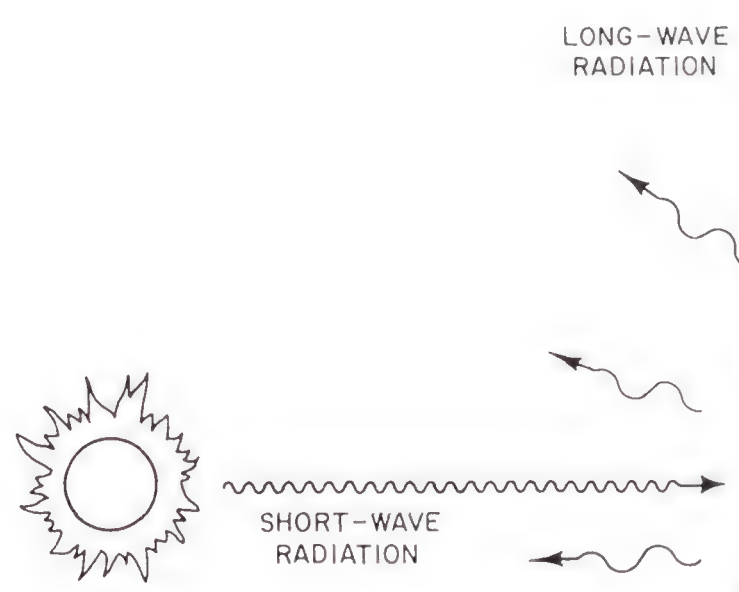
the sun. It passes through the atmosphere, is stored in the ocean, then delivered back to the atmosphere, probably at a different place and surely at a different time. If it's calm, then the sun just heats the top layer of the ocean. When the sun disappears, the heat is radiated back to the atmosphere. If there's a lot of wind when it's sunny, then it stirs all that energy down into the water, making it a lot harder to get back out." That is just the radiative part of the problem. The wind itself provides energy—momentum—which is stored in waves and currents. The wind operates in the atmosphere: energy to make the wind comes from heat radiated from the ocean and land.

"It's a monstrously coupled system," said Mel. "The whole point of JASIN is to study how energy gets into and out of the water. We really don't understand that very well. We have a lot of formulae, based on experiments that don't have any physics in them. But when you get to the difficult questions—what happens if the increase in atmospheric carbon dioxide gets to the point where it seriously affects solar radiation?—we simply do not know."

At Yorkhill we had to push to get all the instruments uncrated, set up, tested. In our main lab everything that could move was secured with turnbuckles or shock cord. The heavy stuff astern was chained to angle irons welded to the deck.

Someone had put up a fake inclinometer—a ship-roll indicator—on the overhead in the main lab: "0°, 10°, 20°, 30°, 40°, *forget it*!" On the bulletin board was an article from a technical magazine claiming that there are two areas in the northern hemisphere capable of producing waves up to 219 feet high. One is the Gulf of Alaska, the other a storm's width away from the Area. Funny, yes, but when a heavy reel of hydrowire slipped in its crane slings, the imagination played with the mishap, adding a wet deck and a 20-degree roll.

Fantail cluttered with buoys (see close-ups pp. 84-85), *Atlantis II* is made ready for sea at Woods Hole. In preparation for the rough weather that lies ahead, heavy equipment will be chained to the ship's deck.



This diagram outlines global air-sea energy exchange. Sun's short-wave radiation warms ocean most at equator. Ocean currents moving toward poles distribute the heat, which returns to atmosphere as long-wave radiation. Radiation helps create wind that moves water, complicating interaction.

We were ready to go, joking with Pollard and his group on the quay. They had all been out to the Area before us. They would join us in a few days, aboard three British research vessels. But for that moment, they were the landsmen and we the seafarers. The difference, the separateness, was between us as we waited, facing each other across a meter of filthy water. Then the lines went.

We ran down the Clyde, breaking free of industrial suburbs and mass housing into the sharp green of sheep pastures and the hills beyond. Then Greenock, to drop off the pilot and computer repairman, and the turn south to the Firth of Clyde and the sea. *Atlantis II* did well by the weather, but the roll-and-pitch, coming on so quickly, overloaded human circuits. Faces turned white and sweaty. Even the saltiest headed early for their bunks, and there was more than one rush for the rail.

Things were bad enough down on the second deck, where we lesser lights were quartered. Forward on the upper deck, where the captain and chief scientist had their cabins, the trampoline effect was in operation. And that was where we went for the first meeting of project chiefs.

For almost 60 days at sea Mel Briscoe would be responsible for all scientific activity aboard, as well as the coordination of some synchronized measuring experiments with other JASIN ships. The job is a juggler's. The chief scientist must manipulate machines and men to take advantage of every hour of ship time, each worth hundreds of dollars. He must do that without exceeding the stress limits of metal and flesh, of finely tuned circuitry and professionally honed self-

Atlantis II steams out of Woods Hole, Massachusetts, bound for two months of JASIN in North Atlantic.

Sensing equipment deployed by *Atlantis II* includes three moorings supporting variety of instruments (left). CTD, measuring temperature and conductivity, hangs from ship. Vertical current meter is below hull.

esteem. And always there is the weather, the queen bitch of the air-sea interaction people. They need a variety of wind speeds and wave heights to get good data on how momentum is transferred from atmosphere to ocean. But working in bad weather can be exhausting. People get tired, riled, careless. A current meter can be lost, a man's hand, a man.

The planning Mel had done showed early. Sibelius was on the tape deck to help soften the sight of the horizon flying by the ports every few seconds. Mel was after the scheduling. He had a fantail full of moorings, great strings of chain, line, sensors, meters, floats, and these had to be deployed in a logical order. There was the workhorse instrument, the CTD, which looks like the frame of an old washing machine; as its initials suggest, it measures conductivity and temperature at varying depths in the layered sea. There were VCMs, vertical current meters, aluminum tubes five feet long that can be set to float along with a water mass at almost any depth, cricketing their whereabouts to towed hydrophones.

A Canadian researcher belonged to a buoy that follows the motions of waves, measuring the effect of air pressure upon them, and a physical oceanographer from the Scripps Institution of Oceanography had brought another wave-following device—a five-foot floating disc. A radio scientist from Stanford had special radar equipment for reading sea state, and a scientist from Oregon State had four buoys loaded with meteorological instruments and strings of subsurface temperature sensors.

Scientists guide vertical current meter as it is lowered into the sea. The meter will drift at a preset depth, measure subsurface current.

In launching mishap, meteorological buoy called B-4 hits the sea upside down, damaging expensive instruments. It was soon repaired and relaunched.

Several oceanographic institutions cooperated on JASIN. This buoy, called W-2, carries instruments both from Woods Hole and from Scripps.

Mel kept asking questions, pushing people to work together, accommodating when he sensed there was no more give. Top priority was the development of moorings—entire assemblies of anchors, lines, buoys and instruments. Launching them is always weather-dependent to a degree, and some of these were risky customers; most cumbersome and therefore worrisome was a spar buoy, a great barber pole 16 meters (52 feet) long that would all but insulate the instruments suspended below it from surface-wave action.

The Oregon State buoys first. Mel opened: "We'll probably be close to the Area around breakfast on Thursday. We can spend a couple of hours getting the bugs out of the CTD. Then we can do B-4. Now, my feeling is that we can set a geographical position for B-4 and try to hit that mother on the head for the practice, because that's what we're going to have to do with the others. OK? If we miss, we'll know why. Then I'd like to sit there for the next 12 hours or so—a tidal cycle—and see what the buoy does; how much it swings around, whether it jumps its anchor. Is there any other work we want to get done then?"

So it went, hour stacked on programmed hour, out four days to Sunday. "That's ridiculously far ahead to be planning out here," said Mel. "But that's what the program will attempt to do, and it will just stretch out if there's bad weather."

The Area. Dawn had about made up its mind by 3:30. The gale had gone, leaving a memory in the swell patterns. The birds were with us—fulmars, kittiwakes, the heavy skuas, the crazy-eyed gannets. Small whales, pilots probably, rolled close to the ship. Their spouting "poooooof" was a comfort in the empty gray, in the monotony of the waves—Melville's "infinite series of the sea"—rolling away east toward nothing. Below us, more life, a layer of organisms so dense that it showed on the depth recorder as false bottom. This "scattering layer" rose toward the surface at night and sank in the day. The birds knew about that, and the whales.

This was carefully chosen ocean. There was a fair historical weather record; chances were 50-50 that during the two months of JASIN seven major weather systems would pass through, each lasting a few days, none producing winds of much more than 60 knots. But you never know.

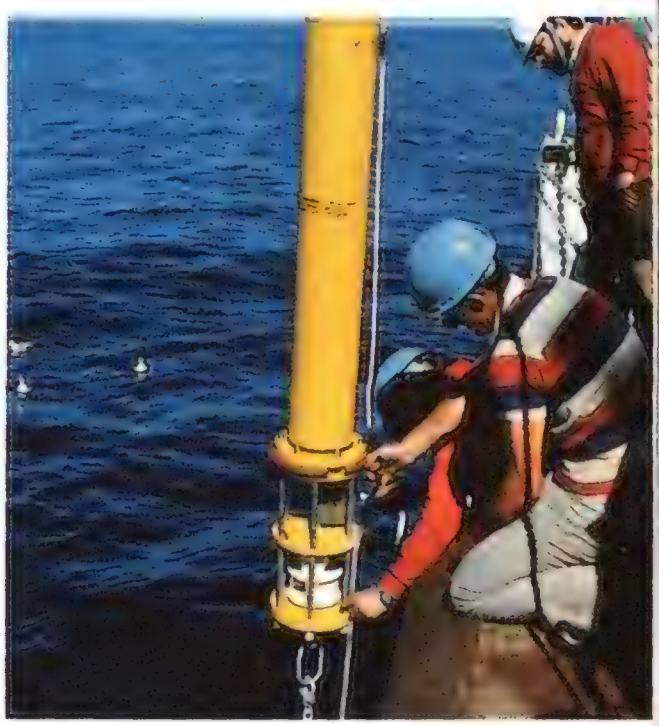
We began. The buoy people were the stars now. Woods Hole may have the best buoy group in the world. They have set some 600 deep-sea moorings. They know about hoisting tons of metal in a rolling sea—when to move, when not to. An engineer with more than 30 years of experience at Woods Hole had the oversight. The moves of each launch had been rehearsed in the language of a game plan.

The meteorological buoy called B-4 was first, according to plan. The fantail was cleared of amateurs. The bos'n climbed into the glassed-in cab of the minicrane high over the fantail. Its hook was attached to B-4, a toroid, or doughnut, eight feet across with an aluminum tower topside and an iron tripod below, attachment point for the anchor line.

The deck boss was ordinarily a joker, which made his seriousness that much more telling. Frapping lines

A 52-foot-long spar buoy is designed to provide maximum stability for the subsurface current meters and temperature sensors it supports.

The CTD, a key research tool during JASIN, measures conductivity and temperature of water, and transmits data back to shipboard computers.



This meter measures current speed and direction. It will record the data on tape cassettes, which the oceanographers will later retrieve.

were rigged to control the buoy's movements as it left the deck. Check lines running to air-tuggers—small pneumatic winches—kept the buoy positioned. The crane whined, the buoy lifted. The deck boss made hand signals to the bos'n: up, extend your boom, over. He yelled to a hard-hatted teammate: "Watch the bight!" A line running to the buoy and back to an air-tugger is, potentially, a slingshot. If you stand inside the bight, inside the angle, and something gives, you run the risk of being fired into the sea.

The buoy was over the port side now, a critical point in the launch. Everything froze. Then the deck boss signalled. There was a hiss of slipping lines as the ship took a roll, a splash.

B-4 was upside down.

No one said anything. Mortification came silently. There was a scramble to rerig. The captain came over to suggest a new purchase point for a line. The buoy came up dripping and turning to be secured, but not before the sensors of a $10,000 wind recorder got bent out of shape.

There were no recriminations. The Oregon State man kept his peace: "It'll do in the sensors, but we have spares." His assistant rushed to get to the instruments before the seawater worked its way in. There was a meeting to go over what went wrong: bad balance, bad luck. The buoy was relaunched, thermal sensors installed on the wire rope, 1,400 meters (4,500 feet) of nylon rope paid out. The mooring was towed to position, the anchor dumped.

The other moorings went in without much bother, though it took some clever work with a quick-release hook and a frantic knife slash to keep bad luck at bay. Anchors hit the bottom pretty much where they were supposed to.

With the moorings in, we settled down to routine, the essential condition of good science. There was no

During rare break from his manifold duties, chief scientist Mel Briscoe practices on penny whistle.

telemetry from all that subsurface hardware; sensors there were storing their information on magnetic-tape cassettes that would be read weeks and months after the cruise. The focus now was on looking at the sea from the ship. The CTD ran like a Yo-Yo, its keepers bleary-eyed before their computer. Vertical current meters had moved off to the west after sinking to their preset depth. But down in the southeastern corner of the Area, they took off toward the east. That could mean the presence of an oceanic front—water of a different density affecting the ocean much as a weather system affects the atmosphere. Since fronts are considered sources of internal waves, Mel was excited. His own work dealt with studying transfer of momentum from the surface to the internal wave. To do that, he first had to identify as best he could all major contributors to internal waves in the Area—tides, bottom configurations, the joining of one surface wave with another—and to isolate their influence from that of the wind.

The CTD people reported more front activity. Their instrument had found a tongue of saltier, relatively warmer water about 200 meters (655 feet) down. Mel wanted better definition and decided on a pattern of XBTs dropped every 15 minutes as the ship steamed at nine knots. The XBT—expendable bathythermograph—looks vaguely like a small artillery shell. It drops through a tube into the sea, trailing a spider's filament of insulated copper wires that carry back its reading of temperature as it sinks. The XBT recorder in the main lab translated the data into lines on a strip chart: straight down through the even temperatures of the mixed layer, curving left as the missile reached the thermal drop-off, then straightening out.

Marine science is hard on equipment—this wind speed indicator broke when damaged by rainwater.

Sleeplessness, tedium and distorted time

Watches were set just before we reached the Area—four hours on, eight off. Some of us helped with the CTD work. The rest were on science watch, taking backup measurements of wind speed, sea-surface temperature, sea state, in case the mooring designed to do that work was claimed by the sea. There was an increasing loss of sleep. Tedium, boredom and reactions to them became measurable in their own right. Time began to distort. We lived in a present postponed, data gatherers unable to sample our harvest. There is a statement attributed to, but probably not originating with, Samuel Johnson: "Being in a ship is being in a jail, with the chance of being drowned."

Sir George Deacon, a dean of British oceanography, wrote that "when it is a question of investigating the characteristics of the great mass of the sea, below the surface, man's dependence on instrumentation becomes absolute." The electronics technicians in the main lab bore him out, muttering over their marvels, cursing tape drives, switching, soldering, triple checking. Tongues of printout paper hung from roller jaws. Digital counters stuttered ruby-red. We were surrounded by pulses, by records of pulses, by backup logs of records of pulses. Life came in millions of bits.

We worked over the vertical current meters with the tenderness of medics. The wave-following buoy people spent hours tracking down tiny drops of seawater, the universal corrosive, that managed against impossible odds to infiltrate the body cavity of their floats. A hair dryer was applied to the innards of another instrument fresh from the sea. The computer man sat up nights with a sick friend: its mother board was acting up. The man to beat was Murphy. On the after bulkhead of the main lab hung an amendment to his Law: "If you improve . . . something long enough, eventually it will break."

It became important to search out, to aggrandize, events. Eating. Someone's birthday: a young woman working for the steward was subjected to "Happy

birthday, Martha Messperson." The calendar: we marked the halfway point of our leg by observing Hump Day. GNOME was duly instituted, the Great North Atlantic Oceanographic Meet and Event, a dart tournament won by the captain. A few experimented with Xeroxing their faces; the results were simian and unsatisfactory. Others badgered the amateur radio operators to try to raise wives, lovers, family. Reception, except for the rat-tat-tat of Russian long-range radar, was terrible. There was always the sea to watch and report on: two killer whales cruising off the port beam, black daggers above the chop; a land bird, a linnet from some summering field, blowing in like a dead leaf under the gulls to drop on the deck.

We paid more attention to the ship; the distance dwindled between the scientist (the transient) and the crewman (the resident). The steward wandered through the main lab, shaking his head at the spewed paper. "All those lines," he joshed. He sat down with the chief engineer in the heat from the engine room door. "Hey, Chief! All they got in there is lines."

Channel fever, anticipation of the run home, hit early and hard. Instruments were taken down, packed in crates. Final tapes were run on the computer. Mel got on the radio to ask that someone keep an eye on our moorings while *Atlantis II* was in port between legs; theft of equipment on the high seas is not unknown. Then we headed south for Anton Dohrn Seamount to measure internal waves over its summit. And from there to Glasgow.

Routine stopped. Ireland rose green in the late light, then the Scottish headlands, smoking across the North Channel. We came out on the fantail to look at the land, delighted. We began to sing, surprised at what we could put together. Folk songs, Bach. The computer man knew every verse of the old European students' song, *Gaudeamus igitur*.

I saw *Atlantis II* a month later, when her JASIN work was finished. She came into the Oceanographic Institution dock on the slack tide; Woods Hole is a devil of a place when the sea is running full in the cut. It turned out the queen bitch had done it again. There was a piece of luck—a gale with winds of more than 50 knots hit the Area while the ship was in Glasgow preparing for the second leg. The moorings should have good data on that. Then things calmed down again, until it was time to recover the moorings. It was a race then between the wind and the buoy group. They got all the moorings except one, and they were ready to drop. The decision was made to hold for the night, and pray. There was just enough of a window in the weather to squeeze through. A few more hours, and the ship would have had to lay to and wait for a week while one low after another came howling through. That would have meant refueling at Glasgow before returning to Woods Hole, and a completely blown budget. It was that close.

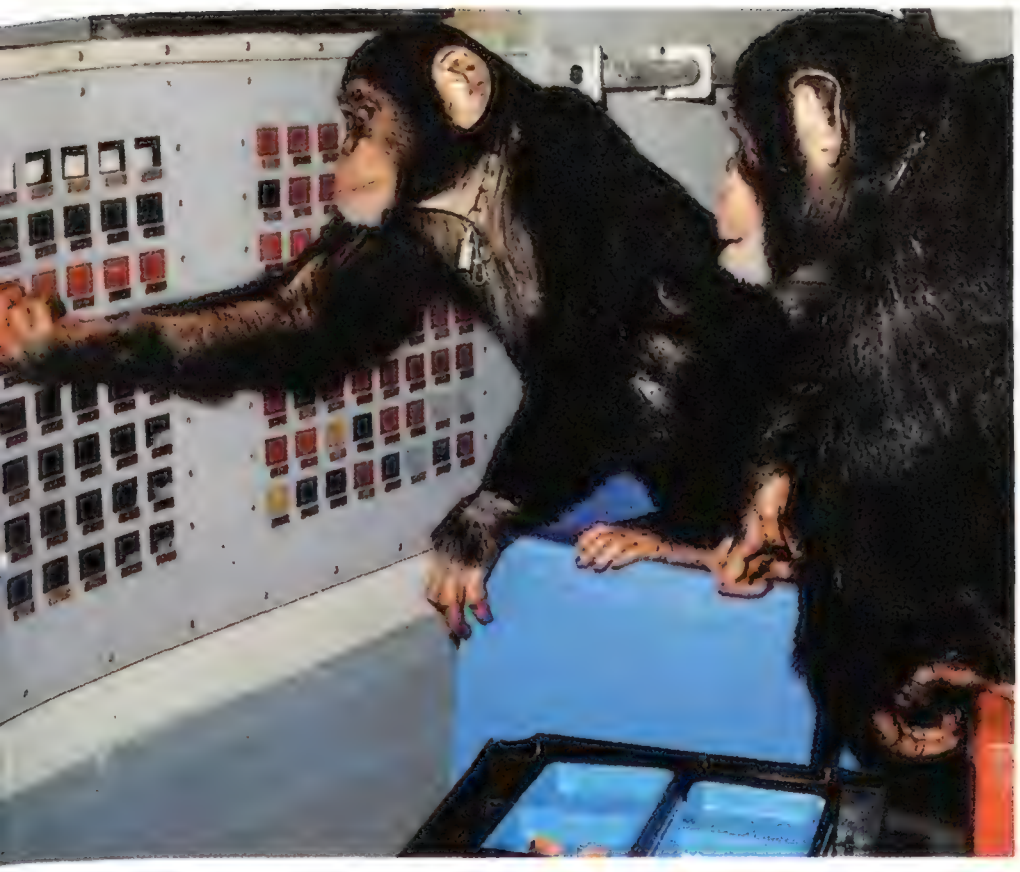
"We turned around and started heading home that last morning," said Briscoe. "For about five days, I couldn't think. I lay around. Exhausted." *Atlantis II* had to dodge south to get away from the worst weather. Even at that, there were times when she could barely make two knots against the brutal seas. The ten-day trip to Woods Hole took two weeks.

A well-run experiment, as ocean science goes. No one was hurt. Some equipment was lost, not much. Some instruments performed poorly or not at all. Some, like the sea-probing radar, had performed better than expected.

An expensive experiment, even for an expensive science. JASIN probably cost about $20 million all told; the United States' part of it, $2 million, most of that federally funded. That is the price of intimacy with a speck of ocean for a flicker of time. The money bought a flood of data that, over the next months and years, may weaken some theories, strengthen others, perhaps contribute to the birth of a new line of thinking. And that was what it was all about.

Henry Charnock, the British oceanographer chiefly responsible for the development of JASIN, was at Yorkhill Quay at the beginning of the thing looking like a cherub who's been around. "If you really want a proper coupled model of the atmosphere and ocean to see how they work together, you'll need this sort of thing," he said. "But it's no good saying that next year it'll be different because of JASIN. It won't. It'll be one piece of the jigsaw. That's all."

Atlantis II pounds her way homeward from Rockall Trough as a rainbow arches above the rough seas.



Austin, a chimpanzee at the Yerkes Primate Center in Atlanta, pushes symbol key to ask for juice.

Having read the now lighted lexigram correctly, Sherman hands his partner the requested cup of juice.

By Maxine A. Rock

Keyboard symbols enable retarded children to 'speak'

A communication system designed for chimps makes it possible for at least some children to get over the walls that have confined them

Cissy, a severely retarded 18-year-old, evinces delight as a picture appears on screen at top right in response to keyboard demand. Behind her, speech teacher Caren Millen offers encouragement.

Inside the Yerkes Regional Primate Research Center, a squat gray building at the end of a narrow, twisting road in suburban Atlanta, a round-eyed, young chimpanzee named Sherman watches as a researcher drops food into a box. Sherman notes that the box is padlocked shut, so he strides to a colorful keyboard embedded in the wall and lights symbols that say "give-key." A second chimpanzee, Austin, observes Sherman's request and then selects a key from a tray of tools. Austin hands the key to Sherman and watches closely as Sherman inserts the key into the padlock, twists it, and removes the lock. Then Sherman opens the box, scoops out the food, and gives half the prize to Austin.

Across town, at the end of another winding road, is the Georgia Retardation Center. In a small room on the first floor is a keyboard just like the one used by Sherman and Austin. A young woman named Cissy sits in front of it. She smiles, and punches the keys to ask, "Royce-give-cookie?" Speech pathologist Royce White grins, hugs Cissy and hands her a cookie.

This, too, is a major accomplishment. Cissy is 18, but has a mental age of two-and-a-half years. Using the computerized system developed for the chimps at Yerkes, Cissy is pioneering a way for researchers to teach the profoundly retarded to communicate with symbols. She is learning to use language.

"Before this, there was often no hope for children such as Cissy," says Dr. Duane M. Rumbaugh. With the Yerkes keyboard system these children can punch

Photographs by Enrico Ferorelli and Maxine A. Rock

a key and see the symbol, whereas spoken words are more transient, and may be lost to them for this reason.

"Now Cissy can live more like a human being," Dr. Rumbaugh adds. "To join the human society, you must be able to communicate symbolically."

Dr. Rumbaugh is the man who came up with the idea of the computer-based language system. He coordinates the language project at Yerkes and at the Georgia Retardation Center and is chairman of the psychology department at Georgia State University.

Dr. Rumbaugh decided to teach language to chimpanzees in the fall of 1970. "I felt that many of the initial symbol acquisition processes could be best understood by training a primate, which does not begin to symbolize spontaneously as do normal human children. I hoped that what we learned could then be applied to those profoundly mentally retarded children who also have not been able to learn to talk of their own accord."

Other researchers had already taught apes to use sign language, but signing was often impossible for many retarded children, according to Dr. Rumbaugh, because of the poor motor control that frequently accompanies retardation.

So Dr. Rumbaugh teamed up with Professor Harold Warner, chief biomedical engineer at Yerkes. With funding from the National Institute of Child Health and Human Development, they and a supporting team of specialists devised a flat, colorful, upright "language" board. This keyboard displays symbols called lexigrams.

Lana, a female, was the first chimp to use the machine. She learned these symbols far more readily than the researchers had initially expected. One day Lana spotted her trainer with an orange. She knew the fruit and liked it, but had been taught no symbol for the object; she did know, however, a symbol for apple and one for the color orange. So Lana made up a request, "Please-Tim-give-apple-that-is-orange."

Lana got the orange. And Tim, her teacher, made up a new lexigram for the fruit.

Lexigrams can be composed of any of nine different elements, such as a straight line, a wavy line, or a circle (below). These same elements, in different combinations, represent items such as "popcorn," "juice," "shirt," "shoes," "cup," "bathroom" and so on. Still other symbols are the names of the children—or the chimps—who use the keyboard, and the names of the

Typical lexigrams on a display board. Choosing from the middle column, bottom to top, one could ask Sherman (or Timmy) to give one a drink of water.

Atlantan Maxine Rock last wrote for SMITHSONIAN (July 1978) *about another breakthrough: how to teach captive gorillas to become good mothers.*

researchers. The lexigrams are used instead of traditional English words because, says Dr. Rumbaugh, "at the time we formulated the project it was cheaper, in terms of the computer's keyboard, to use an arbitrary symbol than written English. Also, we doubted the apes' capacity to differentiate printed words."

Cissy doesn't need written English. If she wants popcorn, she punches lexigrams to say "Royce-give-popcorn." Each key lights up as she punches it, and flashes the appropriate lexigram on a set of projectors above the keyboard. If the word sequence is reasonably accurate, Royce will give Cissy the popcorn. Cissy not only obtains her reward, but she can see the symbols she used to attain her goal. Cissy also recognizes that some objects are as yet unnamed. That is, she has not learned to use any symbol to stand for certain objects. She has, of her own accord, selected previously unassigned symbols for such new objects and then continued to use those symbols when appropriate. Thus, she has, in a sense, invented names which she and her teacher then continue to use to communicate more effectively.

"It's a new approach to language training," says Rumbaugh. "It's taken us further in the treatment of mentally retarded people than we ever thought we could go."

Dr. Dorothy Parkel, who put Dr. Rumbaugh's idea to work in the language laboratory at the retardation center, said she was "somewhat skeptical" about the project at first.

Parkel smiled and looked toward the keyboard.

While an unseen child operates the keyboard (next to experimenter seen through window), Caren Millen provides appropriate pictures, responses and rewards.

Cissy was in front of it. She had requested to see her mother and, as the picture brightened in front of her, Cissy clapped her hands and laughed.

"I am hesitant to set limits on how far we can go now," Dr. Parkel says.

The limitations inherent in a nonportable keyboard system are presently under study. Rumbaugh, Warner and Parkel hope to devise portable, battery-powered units for the children to carry in their pockets. Right now, Cissy and some of the other four children in the program are using nonelectronic portable keyboards which permit them to communicate outside the language laboratory with the staff members of the Georgia Retardation Center.

There will, however, always be limits for such profoundly retarded children. Cissy, who was brain damaged at the age of one by fumes from a leaking gas furnace, may never develop reasoning ability much beyond that of a toddler.

Incredible progress

"But before we began language training, Cissy whined frequently," says Dr. Parkel. "It was hard to get her out of bed. But now she gets up, dresses and looks forward to life. She smiles. She can even *say* some words. She can make herself happy."

Cissy does seem buoyantly happy now. She can skip to the machine, plant herself solidly in the chair and begin a lively symbolic discussion with Royce. Before she learned to use the machine, she floated in a gray mist of human misery. Her new language has penetrated the mist and made Cissy into a person capable of the kind of joy she radiates when Royce says, "Good job, Cissy!"

Equally important, Cissy is now able to empathize with and comfort others. When a struggling photographer became frustrated because she could not get a clear camera view of the computer, Cissy smiled, softly patted the photographer on the shoulder and murmured: "Good job, good job."

Rhoda, another retarded child in the project, shows what Parkel describes as the "most dramatic" behavior change because of her new ability to communicate.

"Rhoda's the youngest one here in our research; she's ten," says Parkel. "She displayed severe behavior problems. She had terrible tantrums during which she tore all her clothes apart. She was diagnosed as autistic. She could not appreciate contact with other humans. She shrank from being touched. She couldn't even look you in the eye. A few months of learning language has changed Rhoda into a different person."

Now she acts more like a normal, bouncing youngster. She hugs Royce and another speech therapist, Caren Millen. She reaches for people's hands. She even

smiles at strangers. One day she will be able to live outside an institution.

Three boys, ages 13, 16 and 19, may also be able to live useful lives outside the retardation center because of their language training. These five children were chosen for the project because they knew very little language but did exhibit some reasoning abilities.

"In other words," she said, "we think these people have some ability and we want to amplify this into productive communication skills."

According to both Drs. Rumbaugh and Parkel, even severely retarded children have more cognitive capacity than chimpanzees. As Lana, Sherman and Austin communicate and cooperatively solve problems, the researchers are learning about the fundamentals of language, with which they hope to help the retarded children to progress much further than the chimps. Rumbaugh and Warner hope to devise mini-keyboards that hook into TV sets so retarded children can talk to their families.

Dr. Parkel believes that language skills "can help these children to learn to use their limited cognitive capacity far more effectively."

"How do we normal people think?" she asks. "We think with language; we tell ourselves things. When I'm driving, I tell myself to stop for bread on the way home. So, I'm thinking. I'm planning. I can't see the bread yet; it's only a concept.

"These kids can be taught concepts. We can teach them to plan for the future, even if it's only a little bit ahead in time. So far we've given them symbols for things, and this is where language begins.

"But what is language?" She sighs, and runs her fingers through her hair. "That's so debated . . . I've almost given up on a definition. But I do know that language takes you out of the present. It enables you to talk about things that aren't here."

A year ago, Rhoda and all three of the boys in the project could only grunt and point shakily to objects they needed, even less talk about abstract items or events. Cissy was the only child in the project who had some verbal approximations for objects. She said "da," for example, but it could mean "doll" or "dog" or "door." Now, Cissy can be more specific about what she means. All she has to do is touch the right lexigram on the keyboard. The ability to be specific enables Cissy to think, and to make some plans. She waves her arms with excitement when she tells Royce—with symbols—that she'll soon go home. Cissy can anticipate a future event.

Several months ago, Rhoda couldn't even tell people she was thirsty. Now, because of her computer training, she has a name for her need—thirst—and she knows the difference between juice and milk. She can use the keyboard to ask for the specific drink she wants. What's more, Rhoda can accept the drink with a shy smile, because she is no longer afraid to ask for help.

Do these developments constitute a panacea for all

Shown picture of woman putting object in her mouth, Rhoda punches the right key and points to her own.

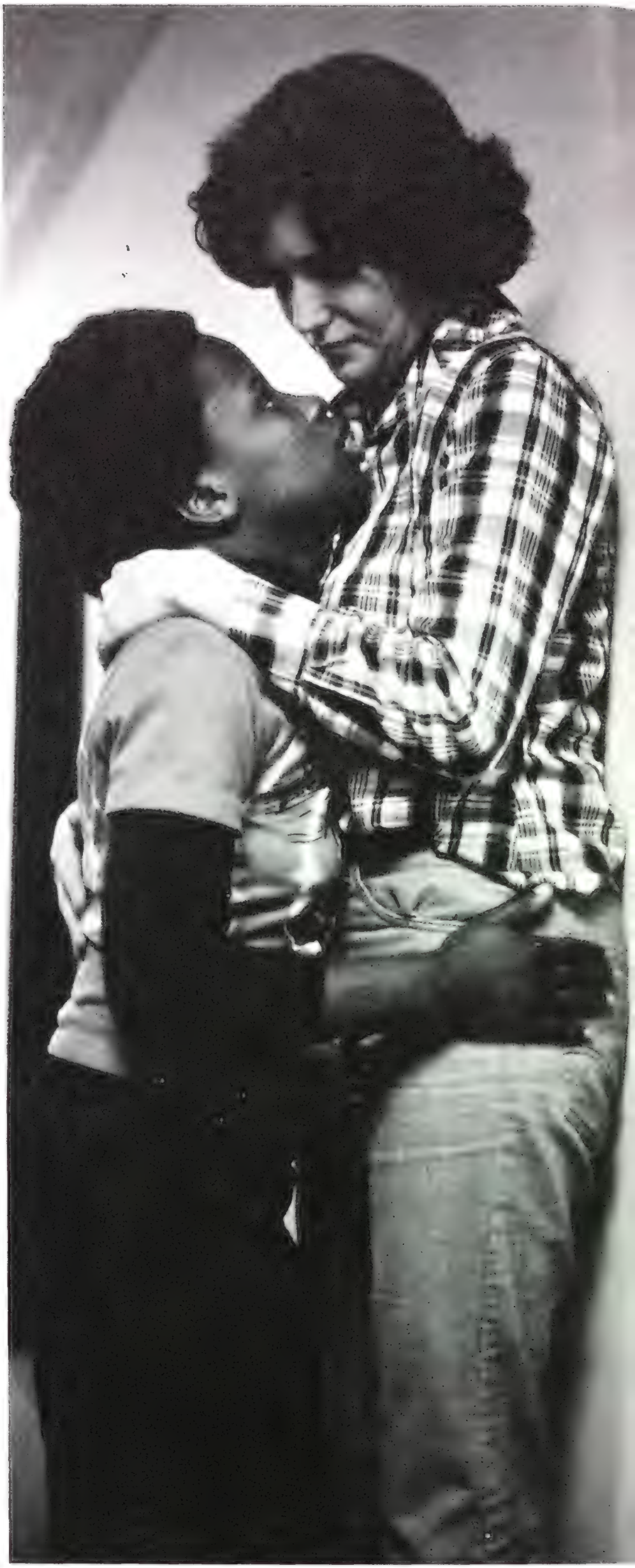
Cissy punches the wrong key, returning to a previous exercise, and hides her face as she understands the error. But that in itself is a big step forward: she can now recognize—and correct—her own mistakes.

severely retarded persons? Rumbaugh says no. "My tentative estimate is that only about one-third of the retarded children with mental ages not in excess of three years have a substantial capacity for language learning. Some of the kids we have worked with learned very little. The children who have progressed, who have a mental age of anywhere from 18-30 months, will always need some help. But Cissy, for example, has increased her Yerkish vocabulary to about 150 words as a result of the program. She's also been able to verbalize—to talk—much better. Rhoda can't talk yet, but she's trying. So are the boys.

"Language is a social thing," he adds. "Primates—apes and people—are social creatures. And both apes and people need a lot of practice to perfect even limited language skills."

The chimps, Sherman and Austin, spend seven or eight hours a day "chatting" with one another. Lana, who is still part of the project, lives with her computer in a special cage. She can punch keys asking the machine to open a window, show films, dispense food and play records. Cissy, Rhoda and the other children who are now in computer-based language training at the retardation center spend less than an hour a day at the computer. Still, says Rumbaugh, the children's progress has been more rapid than that of the chimps.

The scientists say we are only beginning to understand the prelinguistic cognitive processes in children and in chimpanzees. But they have already learned enough from the chimps to change the lives of retarded children and enable them to move from an impoverished domain to one of rich social exchange.



Once withdrawn, Rhoda is now able to communicate and to show affection to Royce White, her teacher.

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By Jane Ross

Feisty Fink, king of battling boatmen on 'the big river'

From Pittsburgh down to New Orleans, in the days before the steamboats took over, nobody outfought the 'Salt River roarer'

Just above Letart's Falls on the Ohio River a light keelboat, narrow and sharp-ended, swung into the current to take the chute. Astride the long steering oar, a man stood on the cargo box. "Pull away!" he shouted. Eight oarsmen gave an Indian yell and broke unevenly into song as they pulled:

Hard upon the beech oar!
She moves too slow!
All the way to Shawneetown,
Long time ago.

In dress, the steersman was indistinguishable from his crew: red flannel shirt covered by blue overcoat, coarse buckskin trousers, moccasins and woolen sash. Only the red feather in his cap set him apart, as did his looks. He was no giant—three inches under six feet and about 180 pounds—but with his well-proportioned, muscular body, his dark hair, steely eyes, broad teeth and sun-darkened skin, he seemed a Hercules.

This was Mike Fink, "Salt River roarer," archetypal American keelboatman of the early 19th century. In the recounting, his life abounds with superlatives enough to blur it conveniently with legend. Mike Fink, in his own words, could "out-run, out-jump, out-shoot, out-brag, out-drink and out-fight any man" on both sides of "the big river" from Pittsburgh to New Orleans and back again to St. Louis.

The author's interest in Mike Fink started with her work on early Western-river waterways, for Smithsonian's Museum of History and Technology.

Keelboatmen were a distinct class from around 1795, when the Indian wars ended on the Ohio, until the 1840s, when steamboats were in full sway. Commerce depended on flatboats, which drifted downstream and then were broken up for firewood, and keelboats which, with narrow hull and shallow draft, could make the upriver journey as well. A keelboat drew about two feet when loaded, averaged 60 feet in length, eight in beam and was worked by a tough breed of men.

Biographical details about Mike Fink are few. Born around 1770 at Pittsburgh, he was a teen-age scout in the Indian wars before becoming a keelboatman. Western style, he proclaimed his own excellence: "I love wimming an' I'm chock full of fight." On the Ohio he was hailed as "The Snapping Turtle," on the Mississippi as "The Snag."

His reputation combined truth with fiction. Tales of his bravado and endurance echoed from keelboat decks and New Orleans brothels. "There arn't a man from Pittsburgh to New Orleans but what's heard of Mike Fink," vowed one captain in an 1837 almanac, for just about every exploit that took place on the Western rivers was attributed to Fink.

In an age when skill as a marksman was a prerequisite for frontier survival, Mike's accuracy was spectacular, but brutal. Approving boatmen recalled the day when "Bang-all," as he also was known, stood on deck and shot off the tails of eight pigs on shore. His sure aim once removed the heel of a black man, for the fun of it, and once separated an Indian from his ornamented scalp lock. As an amusement, Mike and his friends shot cups of whiskey from each other's heads.

A concern for fidelity, not gallantry

At shooting matches offering a beef as prize, Mike would be asked to take "fifth quarter"—hide and tallow—in return for not entering. He would then barter his "tithe" with the tavern owner for whiskey to treat everyone, shouting, "I'm as dry as a salted herrin'!" It was said that he could drink a gallon of whiskey in 24 hours with no adverse effects. Mike's love life was perpetual and varied. There was always a woman traveling with him, and he was constantly concerned about her fidelity. He would not let her talk to other boatmen lest they carry her off. Sometimes he tested her loyalty by shooting the proverbial cup of whiskey from her head or from between her knees.

One autumn day Mike and his keelboats had landed near Marietta on the Ohio. Going ashore, he scraped together a heap of dead leaves until he had a pile as high as his head. Separating the leaves, he lay down on the space to see if it was a good bed. Getting up, he sauntered to the boat, returned with his rifle and made

With keelboat in background, here is Mike Fink. He was no giant but boasted that as a brawler, drinker and braggart he could outperform anyone on either bank of Mississippi River. Seems he could.

Illustrations by Peter Copeland

great ceremony of priming it. Then he summoned his current woman to lie down on the leaf pile.

"Now, Mr. Fink"—Peg always mistered him when his blood was up—"what have I done?"

"Get in there and lie down, or I'll shoot you," Mike roared at her.

Peg obeyed. Mike covered her with leaves, and then splitting the staves of a flour barrel he lighted them at the fire in the keelboat, all the time keeping an eye on the leaf pile and swearing to shoot Peg if she moved. With the blazing splinters he calmly set fire to the pile.

Peg stood it as long as she could but when the fire reached her she sprang up, hair and clothes afire, ran to the river and plunged in. "There," said Mike, as Peg cooled off, "that'll larn you to be winkin' at them fellers on the other boat."

On New Orleans sprees, Mike would roam "the Swamp" on Girod Street, as he searched for a pretty girl. One brawling night he cleared three French ballrooms and had two levee fights with gendarmes sent to arrest him. In Natchez, boatmen always headed for the lower town, "under the hill." During Spanish rule, no boatmen were allowed into the respectable upper town. But one night, Mike apparently went up, stripped and ran through the streets stark naked, pulling a buggy loaded with keelboatmen until the Spanish soldiers chased them all the way back down Silver Street.

At Louisville a reward was offered for his capture. The impoverished constable, an old friend of Mike's, persuaded him to go to court because he needed the reward money. He assured Mike that chances of his conviction were slight. Mike assented on one condition: that he surrender with his crew, in his boat.

A long-coupled wagon was placed under the boat, and Mike and his men, poles ready, were dragged up the hill by oxen. Halfway up, Mike changed his mind:

Mike's loyalty test for his traveling companion-of-the-voyage was a variation on the William

Tell legend: she held a cup of whiskey between her knees, and Mike calmly shot it out from there.

On every New Orleans spree, Fink sought out a pretty girl to go along on his next trip.

"Set poles!" he cried out. The crew thrust their poles into the mud. "Back her!" he shouted. Wagon, boat and men careened down.

At the bottom the constable talked Mike into changing his mind again. This time they reached the summit, but Mike again cried out, "Set poles!" and back down they went. A third try was successful. In court, Mike was acquitted for lack of evidence. Tying a bandanna on a pole, he waved at the crowd and promised to "call again" as he set off down the hill.

The average boatman's life was short and brutish. He had good reason to call the Mississippi the "wicked river." There were snags: "planters" or "sawyers," trunks of trees fixed by their roots in the riverbed, which could pierce a hull without warning. There were sandbars and eddies. A crew could be annihilated by a bank caving in. There were ice storms, floods.

A keelboatman's labor ranged from moderate to backbreaking. From eight to 15 men could make the 1,950-mile descent from Pittsburgh to New Orleans in four to six weeks, floating with the current. Upriver, the same trip took four months or more, and was a strain almost all the way.

On lucky days of favorable wind the square sail could be broken out and 30 miles covered; in deep water, with oars, the boat might make ten or 12 miles

a day. But in shallower waters the men used setting poles "fernenst" the stream. One end was planted in the river bottom, the other fixed against a boatman's padded shoulder. Then on each side of the keelboat, a man crept aft along the gangway, bending under the exertion until his nose sometimes touched wood.

After an arduous haul, the crew might be rewarded with an extra dram of whiskey, an addition to the usual three "fillees" daily. The food the whiskey washed down consisted of fat pork and biscuits, or a pot of mush with a mound of tallow in it. Wild game like deer, bear or turkey and fish varied the menu.

The joy of a good fight seemed to keep a keelboater going. Western boatmen fought with rifles, knives and even the mutilating "devil's claws," metal fingers attached to the hand and drawn across the opponent's face. Most often, men chose either to "fight fair," with fists, or rough-and-tumble, with no holds barred.

After a battle, men usually did not hold grudges; what was done was done. "I just ask half a chance and the odds against me," said Mike Fink.

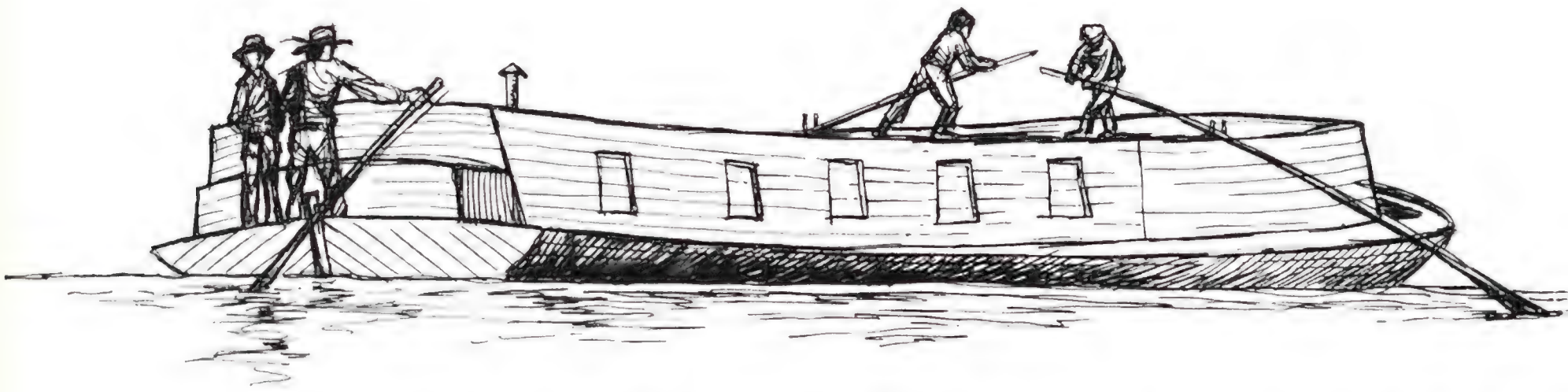
Though Mike most often wore the red feather of victory in his hat, signifying that no one on the boat could beat him and that he was bound to fight anyone who challenged him, there are stories of his defeat in a brawl. "By golly, you're some beans in a bar-fight," he exclaimed to the Reverend Peter Cartwright, who had whipped him to his knees and forced him to repeat The Lord's Prayer. "I'd rather set to with an old he-bar in the dog-days."

The steamboat proved Mike's most formidable opponent. Incredulous boatmen said, "It could not be done nohow." But in 1817 Captain Henry Shreve's *Washington* made the round trip between Louisville and New Orleans in 41 days. Though keelboats ran until 1895 on smaller streams, their heyday was over.

Mike refused to give in easily. Coming upon a steamboat between the Missouri and Illinois shores, a crewman asked anxiously, "Captain Mike, shall we give her the channel?" Mike's reply "was to set his teeth, give a fierce snort, and grasp the heavy sweep himself. There standing erect, he fixed his eyes upon the steamer, while every muscle hardened . . . into granite." Mike did not give an inch. Collision demolished both boats.

"Keel's sinking, Mike," a crewman cried, and Mike gave his final command: "Shore, all!" That proved to be signal enough for most boatmen. Some capitulated to steam and became pilots. Mike Fink, in his early fifties, turned trapper. He was dead within a year.

The first account of Mike's death in 1823 says that at Fort Henry, on the Yellowstone, Mike was shooting the cup from the head of a companion. He aimed a mite low and killed him. A friend of the dead man then shot Mike. Later that year a party of Blackfoot Indians unearthed the bodies. They hoped to strip the valuables from them but, finding them "in a putrid state," as the report goes, "left them without further molestation." Some 35 years later an Indian interpreter, Zephyr Rencontre, was able to point out to a government agent the site of Mike's grave.



This was an Ohio River flatboat, at work about 1806; when loaded for a trip downriver—as far as New Orleans, down the Mississippi—it drew only a shallow draft, was built to be broken up at end of voyage.

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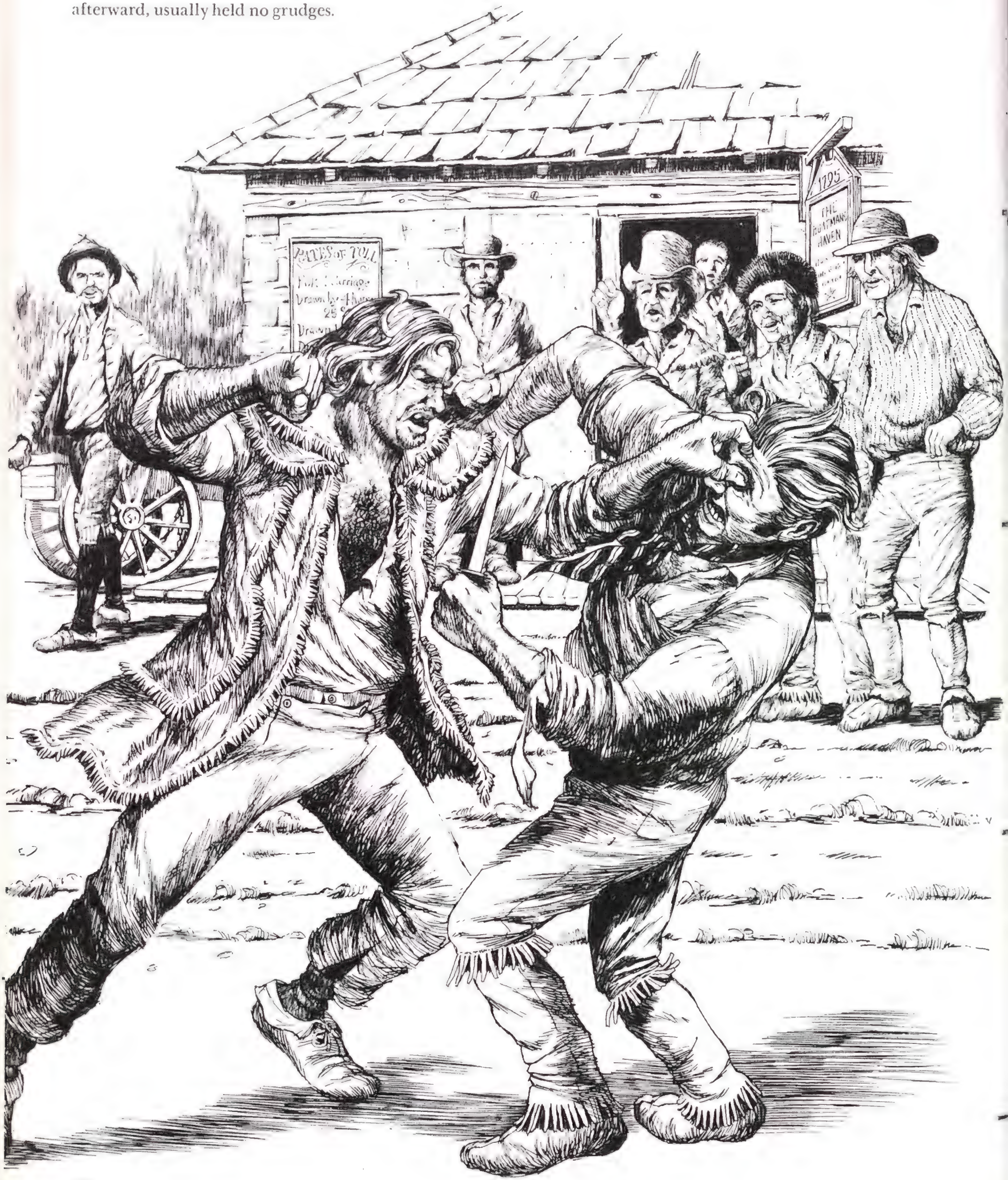
In a boatmen's rough-and-tumble fight no holds, weapons or tactics were barred. They loved to fight and afterward, usually held no grudges.



What do you see when you look at a tree?

It depends on your perspective. You might see a source of jobs.

You might see a source of lumber, plywood, paper, packaging—"need" products as opposed to "want" products.

You might see an ideal base for a growth business, a natural resource that, managed properly, renews itself perpetually.

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By Edwards Park

Views from air show our Earth's dramatic beauty

Photographs taken by pigeons, kites, rockets, aviators, astronauts and satellites provide the Air and Space Museum with a visual feast

A spectacular new exhibit, "Our Beautiful Earth: The View from Air and Space," opens this month in the Flight and the Arts Gallery at the National Air and Space Museum. It bears down hard on the artistic quality of the work of certain photographic masters. But there is also some fascinating coverage of the very beginnings of aerial photography. It's all very well to be a sensitive genius with an extraordinary eye for revealing land formations, but how do you get up there with your camera to start with?

The problem was a good deal harder to solve in the 1850s when wet-plate photography required development within 20 minutes. Balloons we had. But to get a picture from one required a darkroom aboard the gondola. As a French photographer-aeronaut who called himself Nadar discovered, the rush of coal gas from his balloon desensitized his plates. In 1858 he got only a pale positive image of Paris.

Beaumont Newhall, a historian of photography, adviser for this exhibit and an aerial-photograph interpreter in World War II, tells the story of the earliest beginnings of aerial photography in his book *Airborne Camera*. He recalls how the new concept of "instantaneous photographs" allowed cameras to gather the views of small moments. The art of aerial photography soon grew into a science, from concept to sometimes ridiculous trial. Balloons were sent up with wires buried in their anchoring cables to release automatic lens shutters upon signal from the ground. Then dry plates appeared. This meant that an exposed plate could be developed more or less at leisure. If the plate was exposed at 2,000 feet, there was plenty of time to haul it down to earth and turn it into a masterpiece.

The International Museum of Photography, Rochester, N.Y.

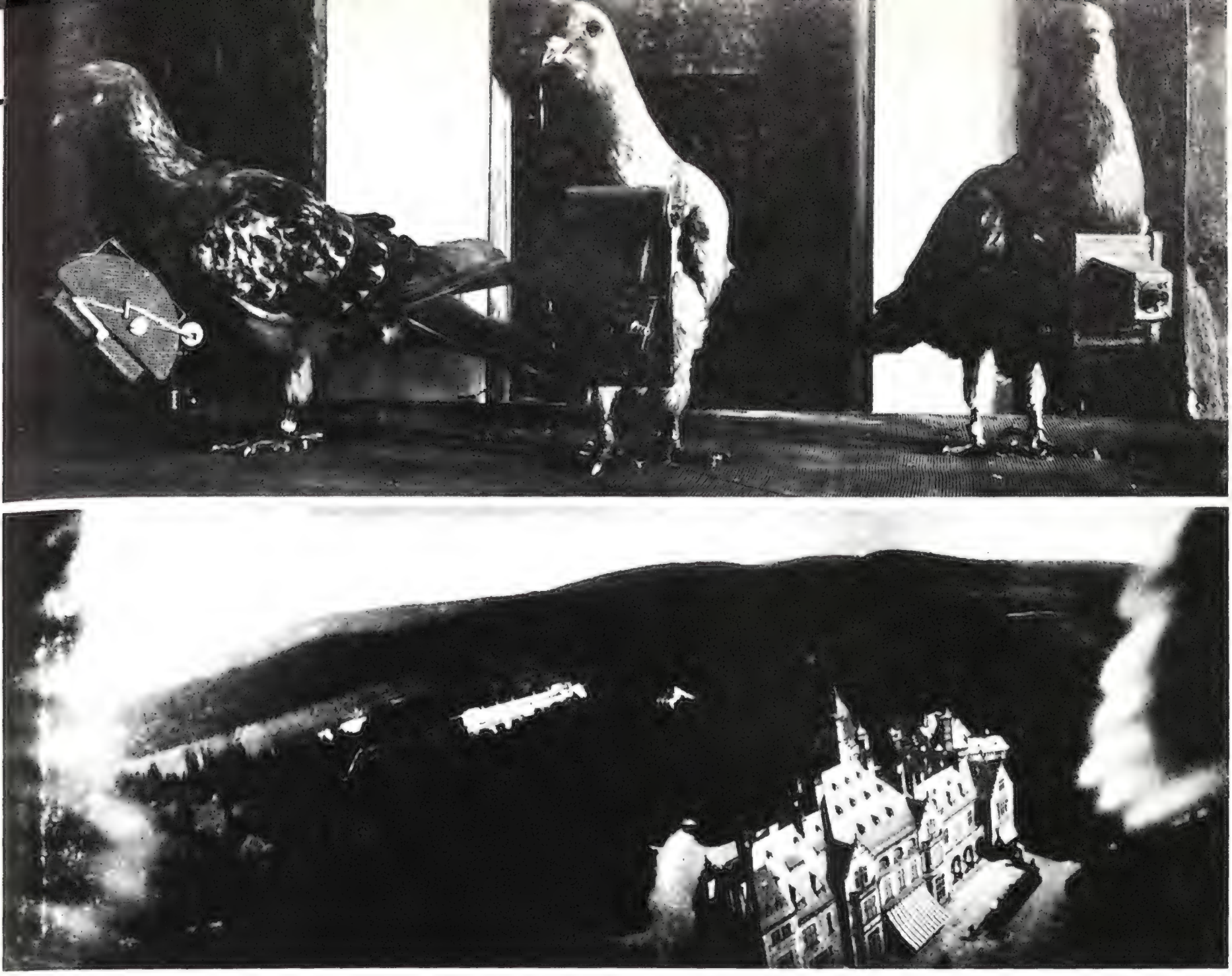
The camera in an early Wright plane is aimed down past the photographer's feet.

Up, up and away—and down in the Seine

The dry plate allowed aerial photographs to be taken from unmanned balloons and from kites. A photographer named Triboulet rode a balloon to Paris, snapping many pictures. Then, according to Newhall, a downpour weighted his basket to such an extent that he finally ditched in the Seine. Eager inspectors, fearing smuggling, went through the soaked gondola and finally pried open the plate holders that held Triboulet's exposed plates. Who knows? His views might have been the best ever.

Kites were used to carry cameras. The San Francisco earthquake of 1906 inspired George R. Lawrence to loft a fleet of 17 kites over the burned-out city with a panorama camera suspended underneath. His pictures were the largest yet from any sort of flying device.

Pigeons got their share of the action. With little two-and-a-half-ounce cameras lashed to their breasts, they produced negatives for enlargement (above, right). The French magazine *L'Illustration* noted in 1908



Both, Deutsches Museum, Munich

Pigeons wear three kinds of special cameras weighing only a couple of ounces and triggered by a timing device. The photograph of German scene shows flapping wings at edges.

that "It is quite natural to see birds becoming photographers at the moment when men are beginning to become birds."

The Germans developed rocket photography. A rocket in its mobile frame would be trundled into position by a squad of specially trained soldiers, then fired off with a camera in the nose cone. At 2,600 feet the cone blew off, a parachute popped open and the camera began its descent. Another timing device took the picture.

Of course nothing served the cause of aerial views as well as the airplane. You could guide it exactly where you wanted. But the first Wright planes were poor photographic tripods. The lone pilot lay down on the lower wing in a cradle. One hand was on the elevator, the other on an engine control. He banked by rolling his hips in the cradle—in fact, he used his whole body to fly, with nothing left over with which to shoot pictures.

Not until the pilot could sit up, with a passenger beside him, did modern aerial photography begin. Its military importance was always obvious, and in World War I some splendid pictures were taken of trench systems, roads and objectives.

Techniques and equipment improved, the old hand-held cameras manned by observer-gunners giving way to automatic cameras that were fixed in position and fed themselves from a magazine of plates. Resulting photographs overlapped, and could be mounted to form a mosaic. Moreover, the overlap provided stereographic views (see SMITHSONIAN, February 1979), so that ground features appeared in three dimensions to make the photo interpreter's task easier.

The National Air and Space Museum exhibit shows the artistry that can be achieved by good photographers in the air. Here are displayed the works of four: Garnett, Bucknam, Gerster and Hall.

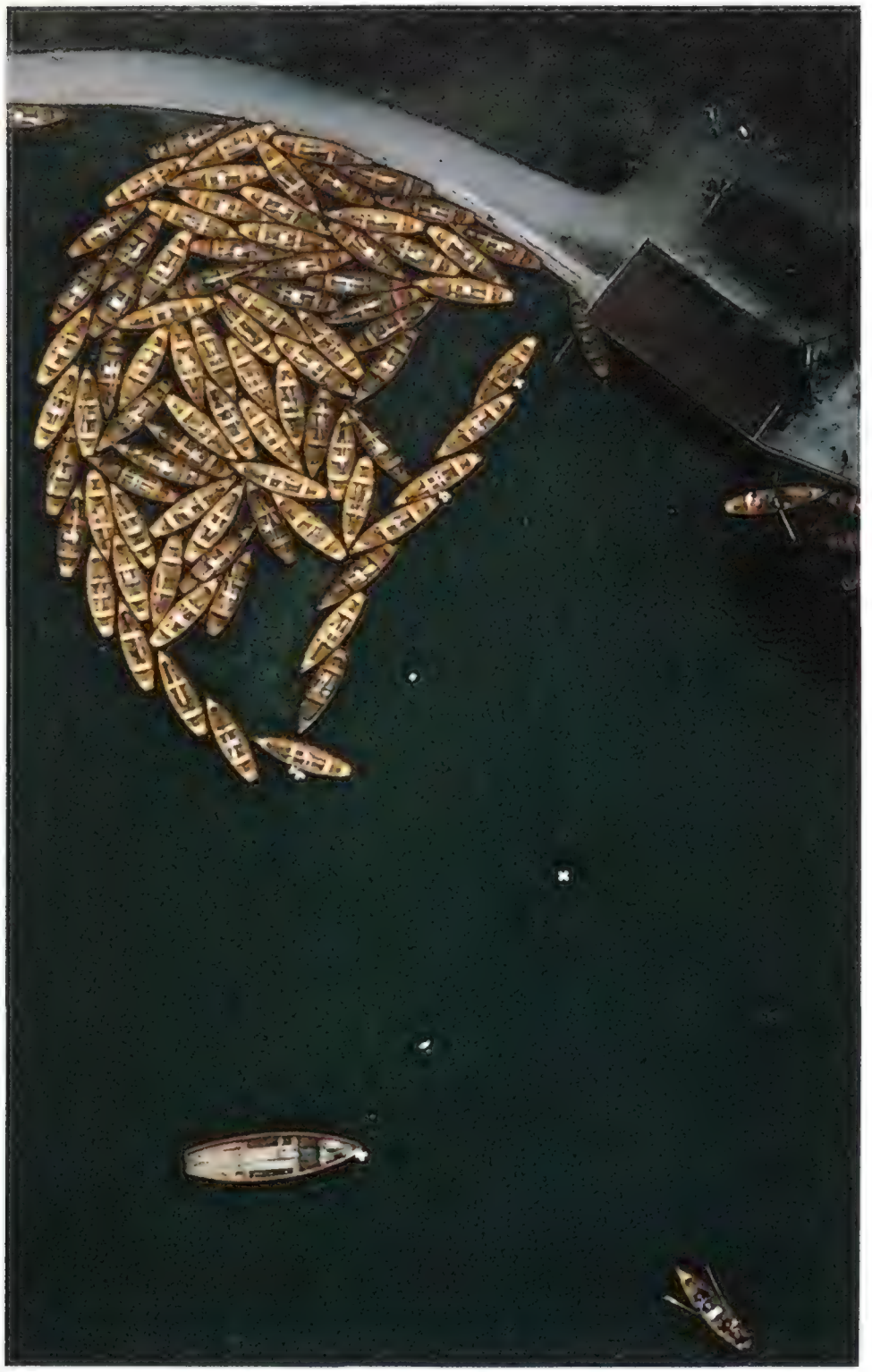
William A. Garnett of Napa, California, teaches at the University of California at Berkeley. But he also spends happy and productive hours in his old-fash-

Text continued on p. 110

Georg Gerster, flying over Engadine in his native Switzerland, caught this flow of skiers in a cross-country race with 9,505 contestants.

William Garnett's spectaculars are about to be hung by James Dean, the show's curator (right, behind Death Valley view), with aide William Good.

Lava rocks in Washington pick up golden glow from late afternoon sun. Snow provides the stark contrast in this Robert Bucknam picture.



Like clustered corpuscles, George Hall found a small fleet of rowboats-for-rent in a Paris pond.

ioned "tail-dragger" Cessna, a dainty and responsive little plane with a lovingly polished silver skin. In this, Garnett cruises the land or the coast, looking for the designs, made either by Man or nature, that stir him. He produces a 35-mm camera, opens his window, trims the plane and lays it into a steep bank so he can shoot almost straight down (see SMITHSONIAN, May 1977).

Robert Bucknam, nephew of a pre-World War II barnstormer and a former Navy pilot in his own right, uses much the same technique as Garnett. Most of his displayed photographs were taken west of the Rockies where desert and mountain terrains present him with targets of wonderful coloration—lava beds and snow cones and sand dunes and even mud flats (p. 109).

Georg Gerster was born in Switzerland, educated at Zurich and became science editor of a Swiss magazine. He began working on books about the Upper Nile and Ethiopia. It was then that he started photographing regions from the air in order to understand them more fully. He has flown over and photographed 59 countries, so his repertoire is broad. Again, it is pattern that intrigues him (p. 108).

George Hall, a Chicagoan, was educated in California and got into aerial photography while studying city and regional planning. He differs from the others in his choice of camera platform, for Hall has discovered the blimp and fallen in love with it. He went up in the Goodyear blimp at Florida's Disneyworld and found it just what he needed—low, slow, steady. His photographs reflect the intimate nature of what he sees: trains, development houses, brightly colored trucks, rowboats. At 1,000 feet altitude and a mere 30 miles an hour, Hall is never really out of touch with the earth. He simply has a sublime perspective.

Photographs from space are another matter. In NASA's manned space flights, astronauts were taught to aim and fire a camera. They didn't need to be artistic: whatever they shot in that bleak environment would stir wonder.

Fateful photographs as war threatened

The astronauts' photographs are spectacular. And Landsat pictures with their unique coloration, taken automatically by orbiting satellites, have the mystery of abstract paintings (see map of Chesapeake Bay and Delmarva Peninsula in the March SMITHSONIAN). Space photographs dramatize the barrenness of the visible universe and the fragile fecundity of Earth.

Among the photographs at the new show is a blow-up of one of the Cuban missile pictures which were shown to President John F. Kennedy and which placed us all in the terrifying position of a face-off with the Soviet Union. The remarkable photographic record (p. 113) was made with modern military equipment mounted in F-101 Voodoo fighters that had been converted for reconnaissance. Some of the planes flew over the Cuban missile sites at nearly the speed of sound and at an altitude of about 500 feet, their cameras rapidly exposing strips of film showing everything that lay beneath them.

The results were detailed views of the missile sites, all excavated and ready to take their missiles. Some were in place, but not yet set up. They were identifiable beyond the slightest doubt.

During the grim briefing of President Kennedy, as the photographs were laid before him, he grew restive about the military jargon that flowed so freely. What exactly did the top brass mean by an "occupied" or

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"unoccupied" site, he demanded. Wasn't there a simpler way of saying it?

The CIA came back to him with another photograph taken by a U.S. reconnaissance plane flying exceptionally low and fast. It showed a roofless Cuban army latrine with three stalls. Perched on one was a hatless Cuban soldier reading a newspaper.

The CIA, straight-faced, pointed out to the President that the picture showed a new site of three positions, with one occupied.

The President's face froze as he heard what seemed like the same old gobbledygook. Then he saw the photograph itself and exploded in laughter.

Perhaps the newest method of recording a view of the Earth is the radar picture. In June 1978, a satellite called Seasat was flung into orbit about 800 miles up. Just as Landsat was designed to gather scientific data on our land masses, Seasat worked over the oceans, measuring their wave patterns, their currents—in short, their texture.

Unfortunately, Seasat suffered a power failure and "died," as NASA people say. But the radar images of the Earth that came from it are remarkable. They are striking, three-dimensional views that, like Landsat pictures, can be color enhanced.

So our views from above continue to improve and to broaden. And strangely, as the new display makes clear, our domain seems always to show up in photographs with that art quality that is the essence of the work of Garnett, Bucknam, Gerster, Hall and many others. Satellite pictures, designed to provide hard facts, routinely startle and delight with their beauty.

Missiles sitting on their launching sites in Cuba during the 1962 crisis were recorded from 500 feet.

Donald B. Anderson, Roswell, New Mexico

Inspiration for the work of New Mexico sculptor Luis Jiminez jr. is clear in this example of his art, *Progress, Part II,* in fiber glass and epoxy. He worked in New York, then returned to the West.

By Bill Marvel

A move to edge U.S. art focus toward the Pacific

Painters, sculptors from 13 states start tour in Denver to show what they're doing with the First Western States Biennial Exhibition

With its narrow windows and its fortresslike tower etched sharply against the blue Western sky, the Denver Art Museum (below right) dominates the city's Civic Center.

The imagery is oddly appropriate these days: the museum is host to the First Western States Biennial Exhibition, which will tour six museums, including the Smithsonian's National Collection of Fine Arts, across the country during the next two years. Not that artists and curators are drawn up, ready to defend high art from the Philistines; rather, that the exhibit, a showcase of contemporary painting and sculpture by artists from 11 Western states, plus Alaska and Hawaii, is a kind of challenge.

For as long as anybody in the art world can remember, New York has been *the* place, the center and taste maker where the nation's leading critics and writers hold forth, where most of the important museums and magazines are located, where the isms that have dominated art for the past two decades were born and nursed into robust health, where many of the country's best artists—perhaps too many of them—have always gone to live and work.

Out in the West, folks sense the Biennial as a breeze that is starting to blow their way for a change. Talk to museum people, arts managers and the artists themselves, and you hear it over and over again: if this exhibit can happen, maybe talented artists no longer have to leave their hills and hometowns to test themselves against the star-making machinery along upper Madison Avenue or down in Soho. Maybe it is possible for an artist to paint in Denver or Portland or Laramie and get the recognition he or she deserves.

That was the hope that hung in the air one afternoon almost exactly three years ago when Jan Steinhauser sat down for lunch with a young Colorado artist. Mrs. Steinhauser is director of visual arts services for the Western States Arts Foundation, an organization formed by the arts agencies of ten Western states back in 1974 to deal with the mutual problems of vast distances, shortage of arts facilities and a need for coordinated planning.

The artist had just returned from New York where he had made the obligatory rounds of galleries and curators, promoting his work. The result had been a single one-man exhibit that went unreviewed and practically unseen. Understandably, he was bitter. "The crux of the problem," Mrs. Steinhauser says, "was the difficulty contemporary artists find in gaining access to the New York market, to the media, to publications, to the name-making opportunities."

What the artist had proposed to her that afternoon in the restaurant—the germ that was eventually to sprout into the Western States Biennial—was a kind of art network in which the very best work being done throughout the West would be sent to Denver, winnowed and forwarded to New York. A short time later, she asked the Foundation's president for $5,000 to explore the possibilities.

The artist was hired to develop his idea and, with the help of Lewis Story, associate director of the Denver Art Museum, and Mrs. Steinhauser, a working proposal began to take shape. There would be a network of art experts from the 13 Western states (the ten Foundation member-states and California, Hawaii and Alaska). Each would put together a committee to nominate eight artists currently doing outstanding work in the state. Work by those artists would be

Exterior of the Denver Art Museum, faced with "pyramidally faceted" glass tiles, reflects the sunlight.

Diana Fuller, San Francisco

From Cotati, California, comes Robert Hudson's mixed media creation, *Daddy's Apron Strings.*

Utah's Frank Anthony Smith is gaining attention with style that combines elements of new photorealism

juried in Denver and an exhibit would be assembled that would include one artist from each state plus a number selected at large.

"We wanted unknown as well as established artists. If the expert was in Oregon, we wanted him to look outside of Portland; if he was in Colorado, he was to look beyond Denver," says Mrs. Steinhauser. In the meantime she got commitments from the San Francisco Museum of Modern Art, the Seattle Art Museum and the Denver Art Museum to show the exhibit and to organize future editions of the Biennial on a rotating basis. With these pivotal institutions in place, the proposal was sent to the National Endowment for the Arts at the end of 1976 and by summer 1977 the Endowment had granted the Foundation $33,950 for

and old-fashioned trompe l'oeil, as in this acrylic example, *Casa de las Culebras* (Snake House).

Raymond Goetz, Lawrence, Kansas

John E. Buck, Belgrade, Montana, is attracting notice with polychromatic basswood pieces; here, *Aloha*.

the project. Matching grants were rounded up from two corporate sponsors, both with distinguished records in arts support: Dayton Hudson Foundation and Philip Morris Incorporated.

Within a few months Mrs. Steinhauser and Robert A. Ewing, a New Mexico painter and former curator retained by the Arts Foundation, were on the road, trying to line up additional bookings for the show. If the purpose of the exhibit was to get these artists exposure in the East, they recall, then an Eastern booking was crucial. But it was extremely difficult. At the Brooklyn Museum and at New York's Guggenheim Museum and Whitney Museum of American Art—the logical places for the exhibit, they thought—they were courteously received but just as courteously turned down. Next came Washington, a city which during the past decade has grown into a major art center. Because of this, Washington was almost as vital to hopes for an Eastern showing as New York. There they found a sympathetic ear in the person of Dr. Joshua Taylor, director of the Smithsonian's National Collection of Fine Arts.

In the last few years the National Collection has sponsored exhibits of contemporary art from the Pacific Northwest, Alaska and California (SMITHSONIAN, May 1977). Last year the museum purchased a work from the annual juried exhibit of Winston-Salem's Southeast Center for Contemporary Art (SECCA), a pioneer in the promotion of regionalism (SMITHSONIAN, January 1979). Support of a Western States Biennial fit in nicely with the museum's philosophy: "I believe very strongly that there's a decentralization taking place," Dr. Taylor says. "New York is still the market, let's face it. But something very interesting happened during the 1970s. More and more artists were content to live elsewhere. And little by little their work is being recognized by people in their own locales. I thought that as a national museum we could help out."

With four museums firmly committed to show the exhibit (several more are still negotiating with the Foundation), the time had come to make sure there would be an exhibit to show. Artist Robert Indiana agreed to serve on the jury; the other four members, representing the sponsoring museums, would be Sarah Clark, associate curator of contemporary art at the

Bill Marvel writes about contemporary culture for the Dallas Times Herald.

Merrill Mahaffey, of Phoenix, Arizona, paints intense vistas of surrounding land like *Red Rocks I.*

Seattle Art Museum; San Francisco's Henry Hopkins; Harry Rand, associate curator of 20th-century painting and sculpture at the National Collection; and the Denver Museum's curator of contemporary art, Dianne Vanderlip.

"It was the most interesting jury I'd ever been on," says Mrs. Vanderlip. When the panel sat down in the Denver offices of the Western States Arts Foundation last spring, the five jurors faced a formidable task: the art-network experts had nominated no fewer than 104 artists for consideration, each represented by a series of color slides or photographs documenting his or her work. "Everybody felt how important this show was," she adds.

Nobody, perhaps, as keenly as the artists.

"I've gone as far as I can go in the Southwest," says Beth Ames Swartz, one of the artists ultimately selected for the exhibit. "I'm hoping that this show will push me onto the national scene." Mrs. Swartz was born in New York City but for 18 years she has been painting in Scottsdale, Arizona. She had exhibited here and there, but her selection for the Biennial helped convince a Soho gallery owner to give her her first one-woman show in New York.

Mrs. Swartz gathers the soil with which she stains her paintings from the mountains near her studio. She also mutilates her paintings, burns them and exposes them to the elements in a ritual process she calls "disordering"; the resulting works have the weathered eloquence of ancient manuscripts freshly discovered in some cave, earth still clinging to them (p. 119).

Merrill Mahaffey of Phoenix is a former abstract painter whose style changed abruptly after a visit to New York in 1972. "I took some paintings back and left them with friends. The word I got was that the galleries were pretty uninterested. The work I was doing was a kind of color painting, mainly overlapping stripes in sky and autumn colors—blues, grays, greens, turquoise—definitely Western colors." The prevailing tastes, he discovered, ran to hot colors, fresh out of the tube with no references to nature or natural processes.

"I came back here and immediately shifted to a more representational kind of work. Within a few years I was painting the kind of landscapes I was familiar with." Mahaffey's painted close-ups of rock surfaces and shadow (above) do contain some of the grand manner of the 19th-century Western landscape artists, yet betray an allover compositional sense honed on 20th-century abstraction. If realistic painting is making a comeback (and Mahaffey isn't the only person who suspects that it is), one of the places for that comeback is the West. "My observation, traveling around, is that certain artists are very strongly attached to where they are. I call it the 'New Western Art.' I think we're burned out on experimental art. But I'm not so provincial that I don't want to get my paintings back to New York."

Perhaps inevitably, the Western States Biennial raises the question of whether there is a peculiarly Western esthetic, a characteristic style or imagery, without in any way providing a clear, unambiguous answer to that question. From one perspective, Western art is simply art by Western artists.

John Van Alstine, fresh out of Cornell and teaching art at the University of Wyoming in Laramie, might well be living in a Soho loft, judging from his work. Tailoring his pieces for a specific museum space, Alstine leans steel bars against the walls and marks walls and floors with chalked lines in a kind of improvisational drawing. The gallery space functions in the same way as the traditional picture frame or pedestal, he says, isolating the sculpture, focusing attention on it, separating what is art (here) from what is life (out there). To find the sources of Alstine's work, one must

Melvyn Jay Swartz, Scottsdale

Torah Scroll #4, mixed media on layered paper, is from Beth Ames Swartz of Scottsdale, Arizona.

Deco Indian by Fritz Scholder, Galisteo, New Mexico: he is known for dramatic native American portraits.

look not at the Western landscape, but to so-called process sculpture and to conceptual art, two mainstream traditions straight out of the 1960s.

And yet the question of regionalism remains. During the 1950s and '60s, regionalism was a dirty word in the art world. It implied a narrow provincialism, a get-the-wagons-in-a-circle mentality that was associated with a reaction against Cubism, Bolshevism and other dangerous foreign imports.

If there is a new regionalism afoot, it is certainly far more sophisticated than the old version. Without using the label, Dianne Vanderlip suggests that the strongest work in the Biennial has *something* regional about it. "Nowadays you can get art with any 'look' any place," she says, "but the stuff that's authentic comes from the artists who are drawing from their sources. The weakest comes from the artists who are drawing from the art magazines."

Few artists in the exhibit draw from their sources more vitally than Luis Jiminez jr., born in El Paso (he represents New Mexico in the show). Jiminez' astonishing fiber-glass and epoxy sculptures of cowboys and Indians, cactus and cattle (p. 114), gleaming in metallic custom car colors, transform the threadbare clichés of the Old West into polished miracles.

Jiminez, too, has had his crack at New York fame and glory. His works have appeared on the covers of art magazines, in the pages of an important book on contemporary art and in at least one Whitney Biennial Exhibition. "I lived in New York six years," he says. "I was very lucky. I had four shows and was able to support myself after the first. As long as I was considered a New York artist I had it good. Then I moved back West because that's where my material comes from, and from that point on it's been real hard for me. I'm regarded as a Western artist again."

The West has not only affected Jiminez' imagery. "I notice the pieces I've done in the West have gotten bigger and bigger. One in the Denver exhibit is 23 feet long. It has something to do with seeing the horizon line and the open sky.

"I like the fact that there's more American technology in the West, more acceptance of plastics out here," he goes on. "Back East I've had critics call the shiny surfaces of my work vulgar."

Yet it would be a mistake to assume that all the artists in the Western States Biennial are victims of New York neglect. The names of several would be instantly recognized in art circles anywhere.

The illustration on the exhibit catalog cover, for example, is *Deco Indian* (above), one of those Fritz Scholder paintings of Indians in full regalia that have become as familiar in the Seventies as some of the pop icons of the Sixties. Los Angeles' Craig Kauffman is represented in both the Western States Biennial and the Whitney Biennial this year by his powerful white-on-white collage paintings. And here is San Francisco's William T. Wiley, a figure of veneration on the West Coast, whose meticulously painted watercolors depict a world in which junkyard objects, nicked and tattered, are full of mystic significance (p. 120).

The show gains weight, also, from the presence of works by four distinguished artists—honorary invitees—who have spent long and productive careers in the region. They represent, as it were, the first generation of contemporary art in the West. There is Georgia O'Keeffe, of course, a figure of inspiration to artists everywhere; the durable Morris Graves, who, according to some observers, is painting better now than at any other time in his career; Andrew Dasburg, an early proponent of Cubism in the West; and Helen Lunde-

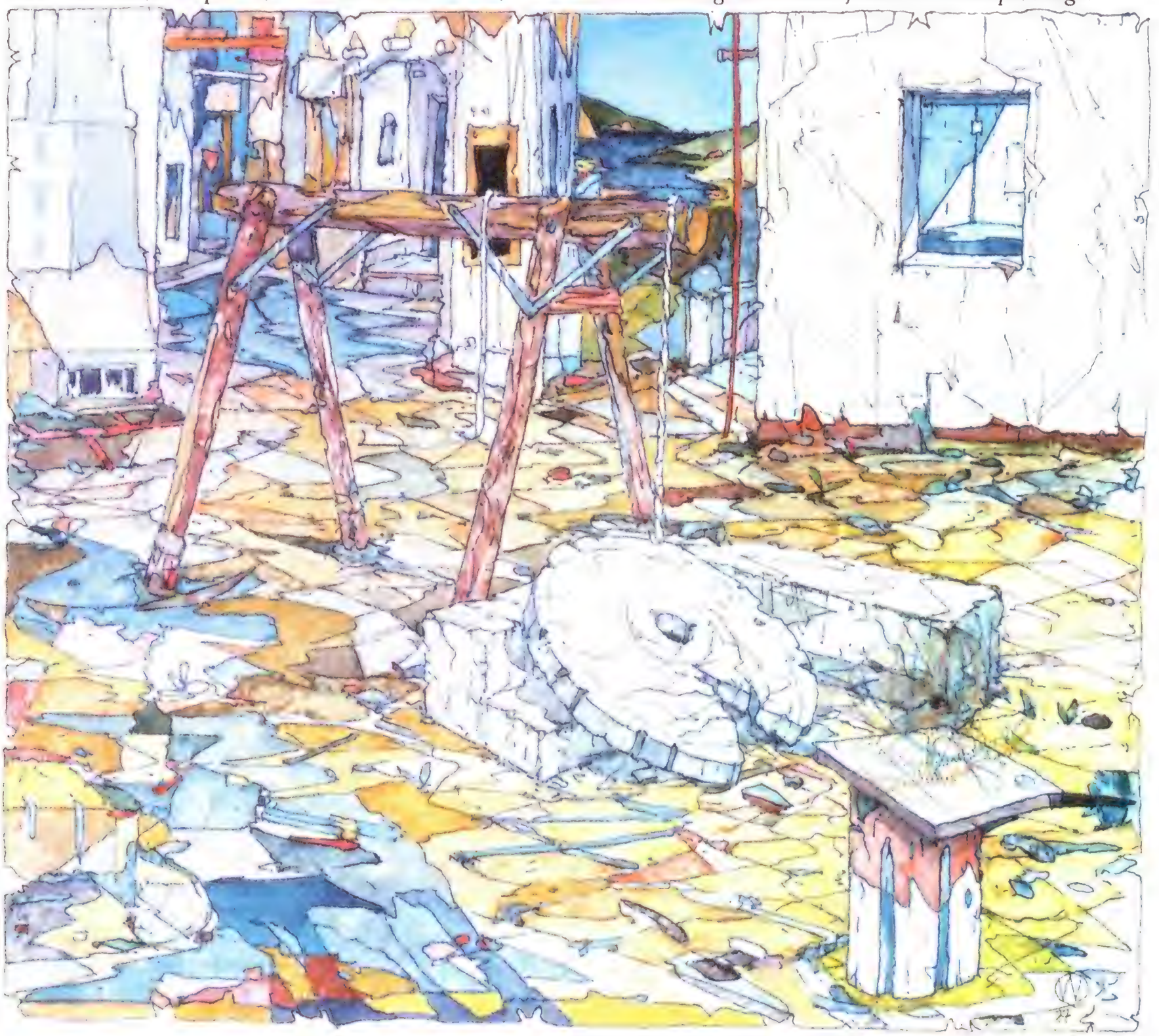
berg, a realist who developed into an abstract painter.

But, in the final analysis, the credibility of the Western States Biennial will depend as much upon the discovery of major new talent as upon the exposure of established masters. Exhibit organizers are already talking about Utah's Frank Anthony Smith, a painter whose work seems to combine aspects of photorealism with old-fashioned trompe l'oeil trickery (pp. 116-17); Hawaii's Doug Young, another realist painter who draws his imagery from Oriental food markets; and John Buck, a promising young sculptor from Montana, who creates sprawling, colorful works in polychromatic basswood (p. 117).

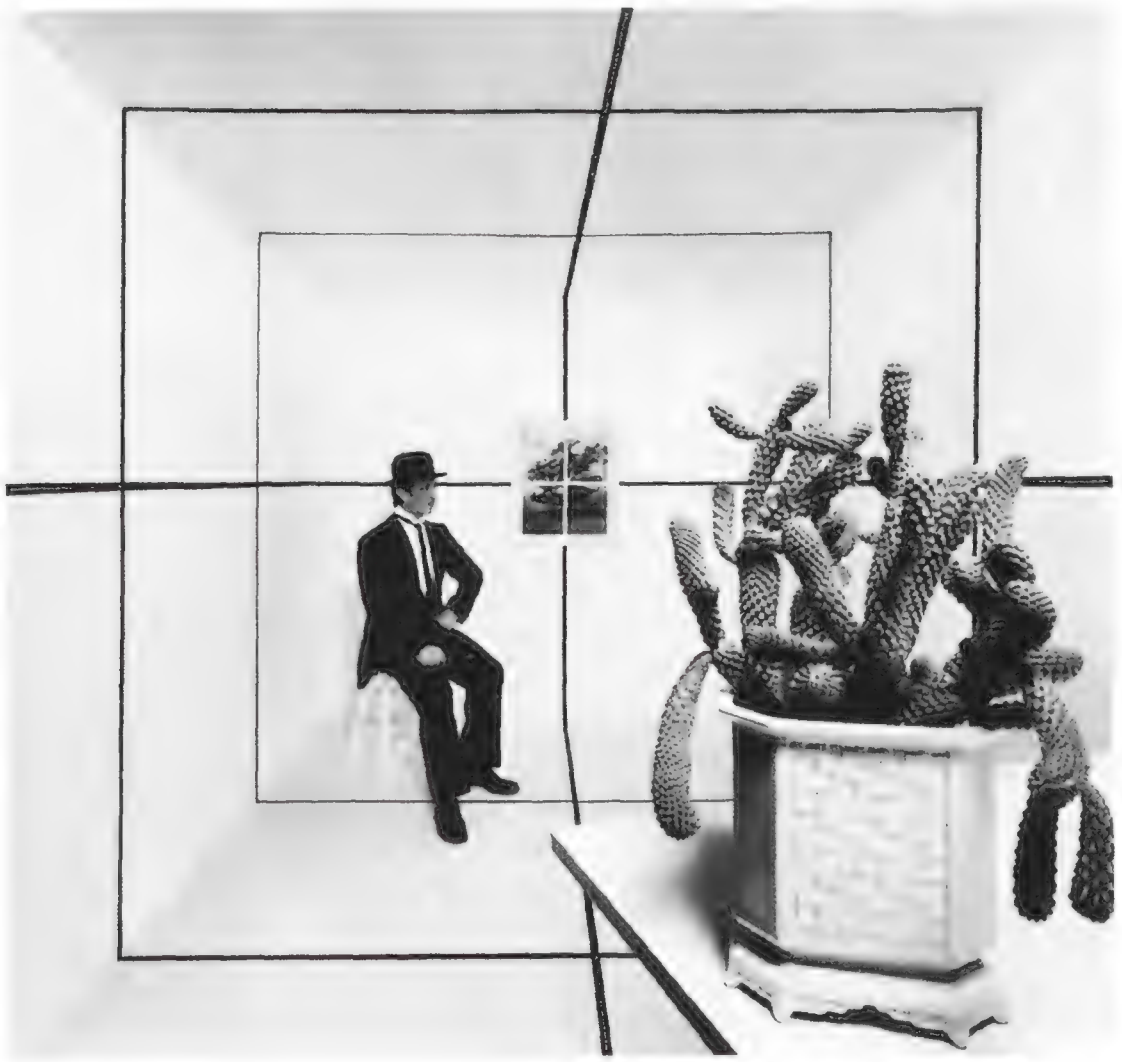
These are just a few among the talents to watch for as the Western States Biennial makes its rounds. After the show closes in Denver on April 15, it will move on to the National Collection of Fine Arts in Washington (June 8-September 3), the San Francisco Museum of Modern Art (October-November) and, in January and February 1980, the Seattle Art Museum. Additions to the itinerary are still being arranged. Then, of course, sometime in 1981 the whole process will begin again as a *second* Western States Biennial starts its rounds.

Beyond that, there is the hope that it will become the prototype for a series of regional exhibits held throughout the United States culminating in a kind of "national regional" in—where else?—New York.

Much admired on West Coast is artist William Wiley, San Francisco, who paints, in delicate watercolors, a different sort of world entirely. This is a detail from his enigmatic *Muse from a Lil Creep Village.*



On Owning the Camera That Could Take This Ordinary Photograph



EXAMINE this photograph through a powerful magnifying glass and you will see that there is...nothing unusual.

But there should be.

A clue: the room was recorded by an extreme-wide-angle lens—the equivalent of a 21mm lens on a 35mm camera. So the vertical lines at the edges of the room should be bending inwards at the top and bottom. *Yet they are perfectly straight.*

The horizontal lines should also be bending. They are straight.

The vase in the foreground should be distorted. It isn't.

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The SWC is also prized by press and sports photographers. The enormous depth of field makes constant changes of focus quite unnecessary. The between-lens leaf shutter is fully synchronized for every type of flash at every speed up to 1/500 of a second. And the cropping possibilities are almost limitless, since each frame of film is 2¼ inches square, *almost four times the area* of a 35mm frame. (See box below for actual size.)

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By Paul Trachtman

Monday Head to Tango Foot (and worse), it's sick, sick, sick!

Whatever you do, a well-chosen malady of work or play will get you in the end—or someplace

You might not think that beer drinkers have anything in common with chicken neck wringers, or Scandinavian seal hunters, or grease monkeys. But they do have one thing in common. It is their fingers, which have turned up in leading medical journals with some rather curious afflictions, and have achieved a kind of medical immortality by having diseases named in their honor, as it were.

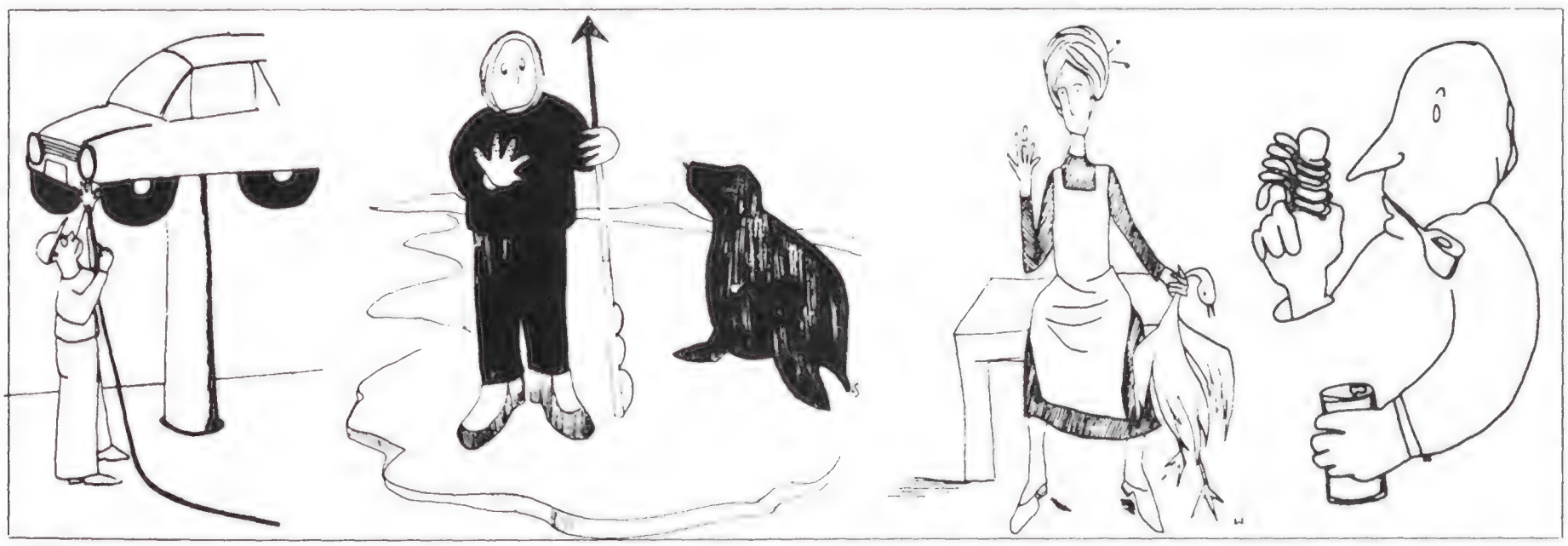
Beer Drinker's Finger, for example, was described in the *Journal of the American Medical Association* as the swelling, bluish discoloration and maceration of a finger frequently used to pull pop-top beer-can rings. In the 1950s, British doctors first identified Chicken Neck Wringer's Finger as the partial dislocation and arthritis of the middle finger joint resulting from wringing chicken necks before slaughtering. Scandinavian Blubberfinger, first reported in a Canadian medical journal, is a finger infection long recognized among Norwegian seal hunters, while mechanics were accorded a disease of their own in 1939 by the *Journal* of the AMA, which described the perforation of a finger by grease ejected from a high-pressure nozzle as, appropriately, Grease Gun Finger.

When one contemplates the human anatomy and its various afflictions, ills, ailments, disorders, agues, maladies, atrophies, ulcers, manges, flushes, cramps, itches, aches, withers and droops, the finger is the least of it. Every part of the body has its own troubles which, perversely enough, seem to mount as it is put to use. Many of these ills are brought on by the work people do, or the pleasures they pursue, as one part of the anatomy or another is overtaxed, wrenched, severed or pressed into some peculiar service.

The more onerous occupations pose obvious risks, so coal miners, besides their notorious black lung, are prone to impairments of the ankle, elbow, hand, knee and shoulder, not to mention Colliers' Stripes, irregular bluish markings on the face, forearms and hands caused by coal dust tattooing the skin. But even the most benign trades may beget disabilities like Academy Headache, diagnosed by British doctors in 1880 as intense frontal headache, sleeplessness and nervous prostration from studying collections of pictures in art galleries; or Aesthete's Foot, the age-old complaint of the educated classes, otherwise known as gout.

The hazards of all human affairs, it seems, are reflected in the names of the ailments which accompany us through all walks of life, and which lie in wait at every turn. The history of the Industrial Revolution is revealed in the ills which befell its workers, from Weavers' Bottom, a bursitis of the hip from sitting at the loom, to Boilermaker's Ear, a deafness from prolonged exposure to factory noise.

It was curiosity about such conditions, inspired by his own practice as a public health doctor, which led E. R. Plunkett, M.D., to the stacks of the Yale Medical Library, where he spent a year dusting off medical journals and perusing their pages for maladies of the workplace, or of our attempts to escape from it. Plunkett's research produced a remarkable dictionary, which was published last year under the title, *Folk Name and Trade Diseases*. Plunkett avoids the worst symp-



Finger complaints make unlikely bedfellows of (left to right) grease monkeys suffering Grease Gun Finger, Scandinavian seal hunters with Blubberfinger, chicken neck wringers and beer drinkers—who all have digital ills named for their activities.

Illustrations by Lynn Sabol

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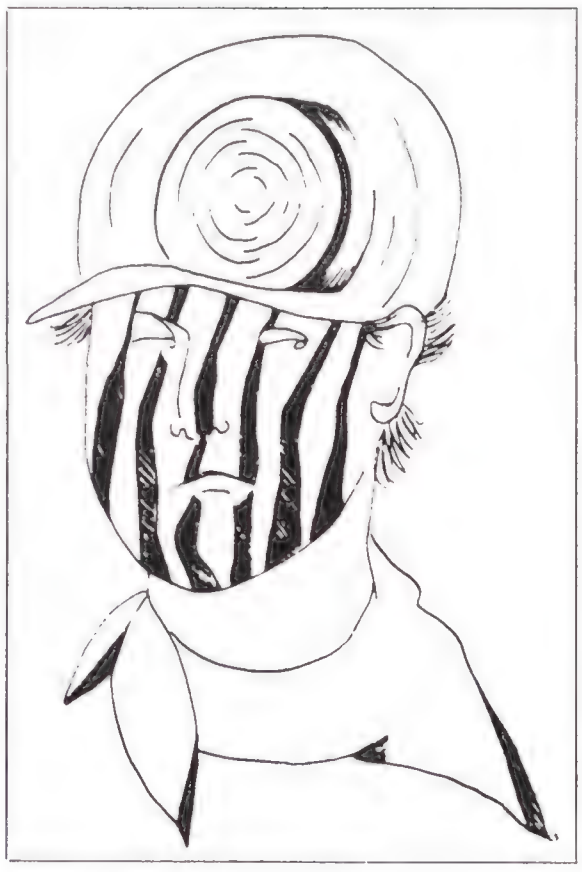

Colliers' Stripes

toms of Writers' Syndrome, described in the *Journal* of the AMA as weakness, redundancy, indistinctness, triteness, endlessness and rejection slips that characterize the work of writers whose manuscripts are not accepted for publication.

Many of the annotated entries, like Pickle Jar Tyer's Cramp, described in an 1886 *Lancet,* might well have been forgotten but for Dr. Plunkett's dictionary, which is therefore of some antiquarian interest. But it is also a guide to modern miseries, such as Credit-Cardit is, which according to the *New England Journal of Medicine* is a sciatic nerve irritation with pain over the buttock and down the thigh from the pressure of a wallet stuffed with credit cards.

The instruments of modern life, in fact, have left a host of new afflictions in their wake. The Wright brothers can be blamed for some 20-odd types of flying sickness, from Aerophobia to Aviator's Ear, Heart, Stomach and Neurosis, and each advance in aviation only seems to make matters worse. Air Controllers have their Syndrome, a peptic ulcer. Jet test pilots get Supersonic Sickness. Helicopter Flicker Disease fells fliers with dizziness and convulsions from looking at rotating blades.

SMITHSONIAN's *hypochondriacal Paul Trachtman has escaped the symptoms of Writer's Cramp and Editor's Mumble.*

Even the stewardesses get sick: Jet Tummy, according to the *Journal* of the AMA, is an abdominal swelling among airline hostesses presumably caused by expansion of gastrointestinal gases at high altitudes. And a passenger who takes off with a neurotic pilot, a bloated stewardess and an ulcer-ridden air controller, may land with Economy Class Syndrome, the *British Medical Journal's* name for venous disorders of the lower extremities, a consequence of immobility during air travel in a cramped section.

If anything, driving is worse. As early as 1904 the *Lancet* recognized Chauffeur's Fracture, a forearm broken because of an engine backfire while the chauffeur was hand-cranking the motor. The automobile seems almost insidiously designed to disable its owner, producing such maladies as Motorist's Heel, Motorist's Knee, Motor Backache, Motor Driver's Spine, Dashboard Dislocation, Sideswipe Fracture, Windscreen Headache, Speed Fever, Seat Belt Syndrome, Reflex Horn Syndrome and Expressway Blues. Small car fanciers may suffer Volkswagen Dermatitis, an allergic contact dermatitis caused by rubber bumper guards. But it hardly matters what you drive. Motor Scooter Handlebar Syndrome awaits you on two wheels, as surely as the curved posture of 19th-century bicyclists was apt to give them Bicyclists' Hump.

Still another modern device, the telephone, had scarcely been installed when, in 1892, the *Lancet* reported a case of Telephone Ear—headache, dizziness and insomnia from overuse of the instrument. This was quickly followed by Telephone

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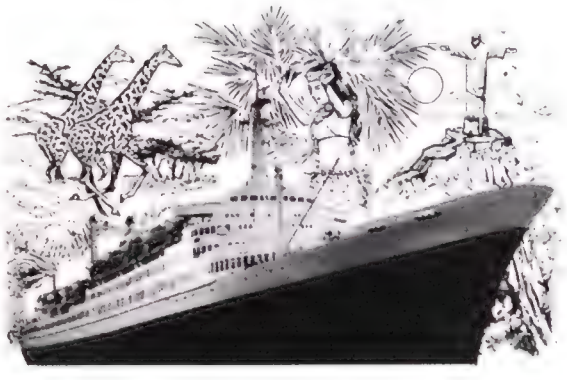

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Tinnitus, a ringing in the ear, nervousness, dizziness and ear pain from similar causes, and Telephone Paralysis, a voice affliction noted by the *Journal* of the AMA in 1900. Listening-In Dermatitis, from excessive contact with the earpiece, was diagnosed in 1924, when the party line was a well-established institution.

The ear has recovered somewhat since television replaced the party line as home entertainment. Legs and necks, however, have taken a beating. Television Legs is an impairment of the lower back and legs suffered by youngsters who spend long hours slumped in front of TV sets. Television Neck afflicts their elders as well. The tube has taken its toll in other ways, too, but none more alarming than TV-Medicitis, or Video Voodoo, the tendency of viewers to catch diseases portrayed in the rash of TV doctor shows.

The health and safety of workers is no laughing matter, with the possible exception of grain-elevator workers who are prone to a grain-dust cough known as Elevator Laugh. Industrial workers and tradespeople are exposed to a pernicious variety of abrasives, irritants, toxic substances, infectious agents, and forms of physical or mental stress. The litany is old and long, from Lucifer Match Makers' Disease, a jawbone ailment from phosphorous intoxication identified in 1863, to Meat Worker's Asthma, a respiratory illness provoked by exposure to fumes from heated price labels, first reported in 1978. Dr. Plunkett's dictionary is replete with examples: Mattress Makers' Fever, caused by cotton dust; or Hatters' Shakes,

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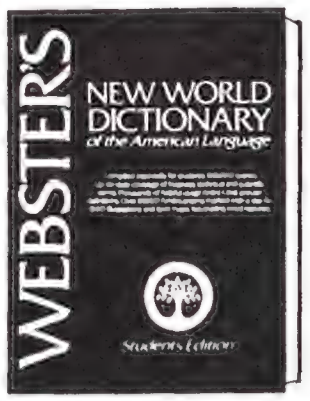

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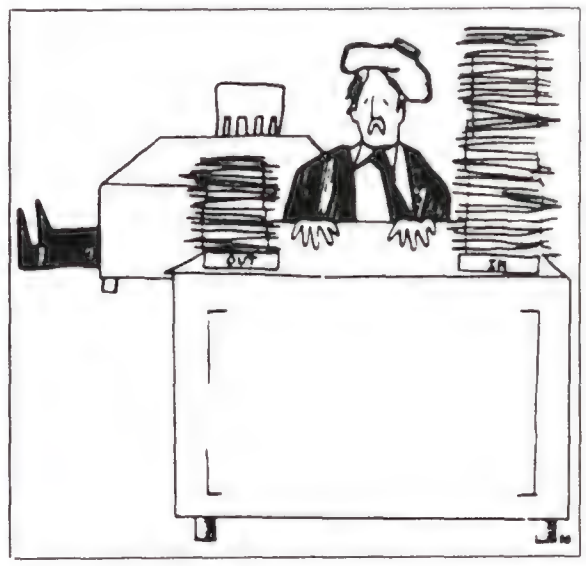
from breathing mercury; or Naptha Jag, a benzene intoxication and depression among rubber workers; or Soap Wrappers' Jig, a peculiar motor syndrome resulting from wrapping too many bars of soap. There are, in addition, Carpet Layer's Knee, Bakers' Itch, Leather Workers' Ulcers, Plasterer's Bunions, and Butchers' Thigh, a blood-vessel injury that is likely to occur when one gets a little careless with a butcher knife.

Some factory workers, like rare birds, can be identified by their markings. Red coloration occurs in several cases, such as Degreasers' Flush, the blotchy red skin of workers exposed to trichloroethylene vapors and who also ingest alcohol, or Red Disease, produced by calcium cyanamide exposure, plus a few drinks. Several other species of factory workers show traces of blue: lead workers are prone to Blue Gum,. TNT workers to Blue Lip, silver workers may have a slate gray skin, while copper workers sometimes can be identified by their bluish-green sheen, called Blue Sweat.

For some workers, Mondays really are the worst day of the week. The Monday Blahs have not yet made it into the medical journals, or Dr. Plunkett's dictionary. But Monday Diseases like Brass Moulder's Ague, Foundry Fever and Zinc Chills often follow a weekend away from factory fumes. Similarly, Monday Head is a problem in certain pharmaceutical plants and in munitions factories, where it is known as Dynamite Head.

Office and clerical workers might be supposed to suffer less abuse than laborers, and indeed white-collar diseases are of a different class from Billingsgate



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Milkmaid's Cramp

Hump, a fish porters' bursitis, or Humpers' Lump, the swelling on the lower neck of timber carriers. But not very different, after all. Among the most common white-collar complaints are Desk Neck, a posture problem, and Executives' Disease, a duodenal ulcer caused by stress. Bureaupathy is an ill-defined malaise among office workers, who may also come down with Air Conditioning Pneumonitis, Typist's Cramp, Label-Lickers' Tongue, or Paper Folder's Fingers, described in the *British Medical Journal* as a deviation of the index finger and calluses of the index and middle fingers resulting from folding large numbers of documents.

White-collar women may have Lipstick Dermatitis (this was first reported among movie stars) or Tight Girdle Syndrome, which the *New England Journal of Medicine* reports as vigorous neck pulses, gastrointestinal symptoms and shortness of breath caused by wearing a tight girdle.

Banking, it seems, is a decidedly dangerous office trade, with a century-old tradition of complaints. Banking Clerk's Dyspepsia, diagnosed in 1879, denotes sneezing, metallic taste in the mouth, nausea and constipation from handling copper and silver coins, while Money Counters' Disease, reported in 1883, is a skin eruption, anemia and weakness caused by the arsenites used in paper money. Not all rude bank tellers are dyspeptic, however. Some may merely be suffering from Money Counter's Cramp.

Strangely, the complaints of card sharps are strikingly similar to those of the banking fraternity. Black Jack Disease, for instance, is a dermatitis of the hands of

gamblers caused by the chromium salts used in the green felt which covers gambling tables, while Poker Player's Palsy, according to the *New England Journal of Medicine,* is a numbness and tingling of the ring and little fingers resulting from prolonged pressure of the elbow propped on a card table.

No less than the factory or office, the field and barnyard are snares for the unwary worker, who may be laid up with Pig Breeders' Disease or Poultryman's Itch, Cornpicker Hand or Farmer's Lung, Milker's Spasm—an occupational cramp of milkmaids—or Derbyshire Droop, a mark of impotence among Derbyshire farm workers exposed to agricultural chemicals.

Of all professions, the military is the most obviously risky, but there are even more martial maladies than you might imagine. One can trace the modernization of war through its incidental afflictions, going back to the Army Itch of 1866 and Boo-Hoo Fever of 1898, described in the *British Medical Journal* as aching, loss of appetite, fever and loss of efficiency found among overseas troops who wish to be sent home.

World War I trench warfare produced 14 occupational diseases, from Trench Mouth, caused by a spirochete, to Trench Shin, a tendon inflammation from wearing tight puttees, and Trench Back, an injury caused by falling sandbags. Shell shock was first reported in 1915, and by 1919 doctors were diagnos-

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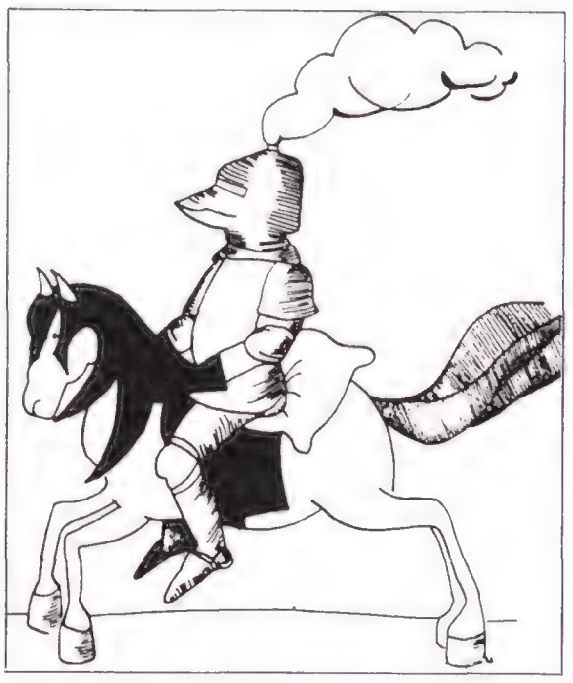

Knights' Disease

ing cases of Barbed Wire Disease, a prisoner-of-war neurosis, and Military Frenzy, a complaint among irritable, battle-fatigued troops. But Battle Fatigue didn't get its name until 1945, in the *Journal of Nervous and Mental Disorders*. In the following year the *Lancet* described the first cases of radiation sickness, which was called Atom Bomb Disease. The Cold War years have added at least one unique illness, Minute Man Disease, a complaint of maintenance workers who suffer lead intoxication while sandblasting in ICBM missile silos.

War may be hell, but it turns out that culture can be almost as treacherous. The music which soothes the savage breast may leave the ensemble suffering from Flautist's Cramp, Cellist's Chest, Guitarist's Groin, Musician's Mouth, and Trap Drummer's Neurosis, accompanied by Choristers' Heart, a cardiac enlargement in choir youths, and Singer's Knots, from overuse of the soloist's vocal chords. Dancing is only slightly less dangerous, leading to such disabilities as Ballet Dancer's Toe or Tango Foot, a leg muscle strain among dancers doing the tango.

Taking up a sport, and surviving, may require more sheer luck than athletic prowess. Children are fortunate to escape with nothing more serious than Little Leaguers' Elbow, Frisbee Finger, or Road Rash—they get that by falling off their skateboards—but they also run the risk of Banana Seat Hematuria, a contusion of the prostate gland from riding on a narrow bicycle seat. Surfers suffer Surfers'

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Knobs, swellings of the foot and leg, and Ding String Injury about the ankles. Swimmers may be sidelined with Bathers' Itch, caused by a snail parasite, or Bikini Dermatitis, from an anthraquinone dye used in bathing suits. Joggers may get high, but they soon come down with Jogger's Heel and Jogger's Nipple. Backpacker's Diarrhea, from contaminated drinking water, can spoil an outing as surely as Backpack Palsy, from the harness pressing on the brachial nerves. And mountain climbers may make it back with Downhill Toe Jam, if they make it back at all.

If the Battle of Waterloo was won on the playing fields of Eton, as the Duke of Wellington said, it is easy to see why. After Cricket Finger and Cricket Thigh, Footballers' Migraine, rugby player's Scrumpox (a face rash from close contact at the scrimmage line) and Pump Bumps (the heel calluses which afflict lacrosse players), what army wouldn't rather face Napoleon?

Perils on horseback

Nor is the horseman's lot a happy one. Knights' Disease, an inflammation about the buttocks, continues to plague riders of less chivalrous stripe, while Hunter's Knee and Jockey's Ankle add to their mounted miseries. Likewise, Cavalry Bone can afflict civilians too, with the formation of bone in the muscle of the inner thigh.

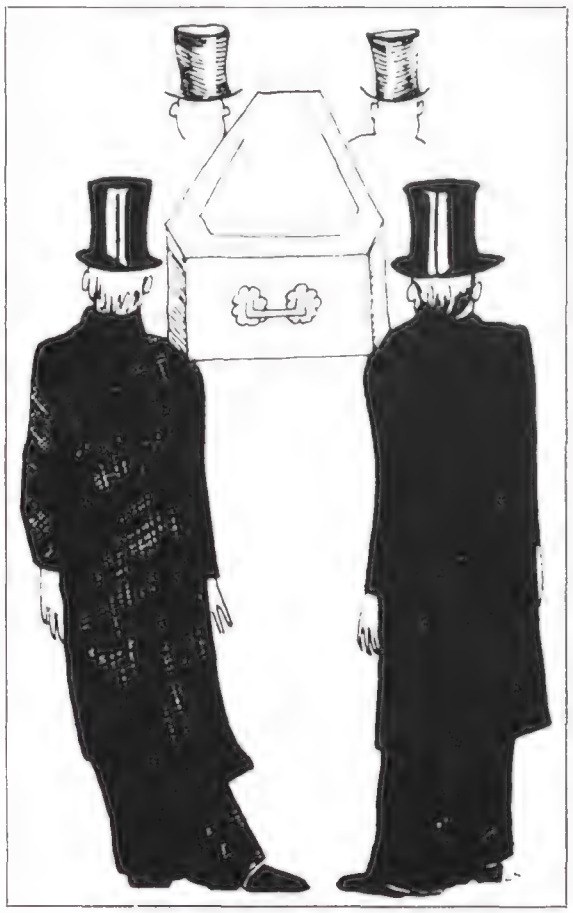
The internal combustion engine has contributed its share of sports traumas, from Stock Car Kidney and Snowmobilopathy to Pillion Rider's Pelvic Split, a malady of British motorcyclists. So has the hang glider, with a predictable array of injuries known as Icarus' Syndrome.

Wherever one looks, it is obvious that the human anatomy has a hard time of it. Without even thinking about the colds we catch, our inherited ills, or the contagious diseases we spread, we can consider it luck if we are still in one piece. But don't expect to get through life without a cramp or two. Actually, there are 75 different cramps which might make you an occupational cripple. According to Dr. Plunkett's dictionary, they afflict everyone from artificial flower makers and cigarette rollers to letter sorters, hairdressers, newspaper folders and cellarmen, whose cramp is caused by opening champagne bottles.

Not all of these occupational ailments need concern us greatly. Few people, on the average, would ever be likely to suffer from Pheasant Hunter's Toe, or Mummy Unwrapper's Lung. But there is no escaping the more common complaints. Not even religion offers a refuge. Nun's Knee, a bursitis shared with parsons, may be more humble but is no less painful than what ails the knees of housemaids. And Minister's Ail, or Clergyman's Sore Throat, is a laryngitis sometimes caused by lengthy sermons. Even Eastern religions, which stress mind over matter, may nevertheless cause Yoga Foot Drop, a paralysis of the foot resulting from the Yoga practice of sitting on the heels.

There is nothing to do but live with these risks, which attend even our births and deaths. We are born, as Wordsworth put it, trailing clouds of glory, but a midwife is not apt to notice them. She is probably suffering from Midwife's Disease, which the *British Medical Journal* described in 1890 as pain and swelling of the wrists and forearms from overuse supporting the perineum of a patient in labor. And as we give up our immortal souls, there is the pallbearer to carry us out, the coffin pressing down on his shoulder and Pall Bearer's Palsy numbing his arm.

Pall Bearer's Palsy



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Book reviews

The War, The West and The Wilderness
Kevin Brownlow
(Alfred A. Knopf, $27.50)

In an age of escapism such as ours, an age that has made the word "film" synonymous with an almost desperate flight from reality, it is hard to imagine a time when film was most celebrated for its ability to capture the look and feel of real life. Yet a good part of the output of the silent-film years was devoted to recording actuality so effectively that, as Kevin Brownlow reports, audiences shown street scenes often yelled warnings at jaywalking pedestrians.

These films of fact, generally neglected in histories dwelling on the more glamorous sides of the industry, are the focus of this enormous book by Brownlow, a British film historian whose earlier work, *The Parade's Gone By*, is one of the most pleasing evocations of the presound era.

Brownlow concentrates here, in often staggering detail, on three areas—military history, Western history and the history of exploration—showing us, if nothing else, the enormous trouble documentary cameramen of a half-century ago, and more, had to go to in getting their pictures. Caught somewhere in the Balkans without a darkroom, Jessica Borthwick, to cite one example, convinced a very dubious local resident to cover her completely with wool rugs, a procedure she found effective but "very stuffy."

Yet though they were supposedly recording history, not making it, Brownlow points out again and again that cameramen of the day were not averse to fudging things in order to get the best possible shots. This was especially so with the characters involved in the various Mexican civil wars. Mexican generals, apparently more vain than most actors, would "re-ride a battle after it was over, with the dead still lying on the ground," in order to look their best. One general, even more cooperative, would put off his usual 4 A.M. executions until the light was more suitable for filming.

When it came to recording the real West, film didn't always do a much better job. Though Brownlow sees silent Western footage as an extension of history because genuine out-of-work cowboys were used as much as possible, the cowboys themselves often felt, as one Tom French put it, that the difference between the real and the movie West was "the difference between daylight and dark."

At one point things got so bad that 220 of them formed the Western Protective Association "to distinguish themselves from cowboys of doubtful ability," *i.e.*, people who couldn't even ride a horse.

The book is illustrated with 350 photographs, very much part of the time Brownlow explores, many of them only recently recovered from cameramen, directors and actors.

The most fascinating section of the book is the final one, which concentrates on films of faraway and exotic places. The trials of Robert Flaherty, the creator of *Nanook of the North*, probably the most enduring documentary ever made, have often been described before, but Brownlow has done an excellent job of summing them up. He has also dredged up some amusing cultures-in-conflict anecdotes, such as the reaction of two visiting Africans to Leo, the MGM lion: "Fur no good. Belly too fat. Too old. No good teeth. In Africa, he would die of hunger."

As delightful as some of this information is, it is hard to escape the conclusion that there is much too much of it. Part of the reason is that Brownlow has chosen to include not only films of fact but also

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fiction films of the period that re-created then-current history.

It is this kind of over-inclusiveness that mars *The War, The West and The Wilderness* from any standpoint except the archival. It is so prodigiously researched and maddeningly comprehensive that it seems Brownlow must have mentioned every single man, woman or child who as much as touched a documentary camera in those years.

—Kenneth Turan
West Coast cultural writer

Heraclitean Fire: Sketches from a Life before Nature
Erwin Chargaff
(Rockefeller University Press, $13)

Erwin Chargaff is a biochemist whose work on nucleic acids made possible the elucidation of the double-helix model of DNA. He is also a prophet—he wonders if a tiny corner of the gene that propelled Ezekiel has come his way or is it plain dyspepsia?—whose apocalyptic vision of science and Western civilization stuns one on nearly every page of this memoir.

He believes passionately that we have mistreated both the nucleus of the atom and the nucleus of the cell. Hiroshima showed him the nexus between science and murder, Chargaff says, but the bomb was a secret until it was accomplished.

Today he believes we are launching an irreversible attack on the biosphere: creation of completely new life forms made from bacteria whose natural home is the human body. Unlike the bomb, this transgression is proceeding in steps so small that we are not aware that it is happening. There is still time to stop research on recombinant DNA, but Chargaff does not expect his warning to be heeded. ". . . It will be a long time before it appears whether I was right or wrong, certainly a longer time than it took for the DC-10 airplane to split up on March 3, 1974, in the forest of Ermenonville, shortly after the experts had certified its airworthiness."

Science once served to push back the confines of the misery of human experience, Chargaff believes. But now, for reasons he is the first to admit cannot be disentangled, it has changed direction. It has evolved from an undertaking to understand nature into one attempting to explain nature (a distinction important to Chargaff) and then to improve on

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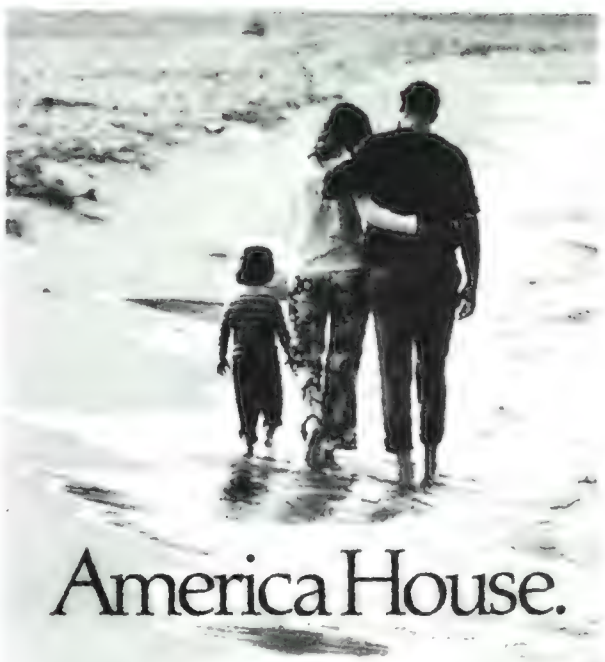

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Scientist-prophet Chargaff at 73.

nature. He cannot help thinking that "when the child has found out how its mechanical toy operates, there is no mechanical toy left."

Earlier he had described his sensations on first arriving in America in 1928 and hearing only black people laugh. Sounding like Theodore Roszak in *Where the Wasteland Ends* and now *Person/Planet*, Chargaff writes: "It was then that I became convinced that the greatest of all revolutions was still to come, one which would liberate mankind from the fetters of mechanistic thinking into which it had permitted itself to be lured by songs about progress, by hymns about science." He is equally convinced today that it ought to happen, but unlike Roszak, who believes it has already begun, Chargaff is much less confident that it will.

Chargaff's approach to science would be a revelation to some of the young people who now seek a way out of the world, he suspects, "with hashish and Hesse." His vision is that of his boyhood:

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He does offer a solution, a Utopian "Neverlands" that he has seen—the small science of the Thirties. One scientist, per-

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haps with two or three younger ones, can pursue the search, away from "the noises and crowds of the market place or the sports arena." He wants the end of mammoth grants, of scientific breakthroughs, of interdisciplinary research.

Unexpectedly, perhaps, there is humor on nearly every page. Chargaff announces early that he cannot be a molecular biologist because he does not play the recorder or enjoy going to NATO meetings on Sicilian mountaintops. Neither can he be a molecular podiatrist, who knows everything about the 15th foot of a centipede.

His most serious thoughts and his funniest wordplays mesh wonderfully in a dialogue between a Voiceless Voice and the author at his own Last Judgment. He confesses that his greatest sin—and his greatest virtue—has been indolence. (This from a man whose own scientific bibliography runs 24 pages of small type and who reads the world's literature in 15 languages can cause a doubtful response in the reader.) In the last fragment he summarizes the history of the 20th century and his own life in a single page that, characteristically, is stunning.

—John P. Wiley jr.
Board of Editors

Buildings Reborn: New Uses, Old Places
Barbaralee Diamonstein
(Harper & Row, $25)

One of our greatest urban resources is the abundant supply of structurally sound buildings which are now unused. Such buildings include schools closed down because of declining enrollment, railroad stations no longer used because transport patterns have changed, and factories now shut because of a change in technology or a shift in the labor supply.

The recycling of such buildings to new uses is called adaptive reuse. It is the subject of Barbaralee Diamonstein's book, a compilation of 95 adaptive-reuse projects around the United States.

The book describes some of the best-known examples of this type of preservation activity, including New York's Jefferson Market Library, converted from a city courthouse, and San Francisco's renowned Ghirardelli Square, a chocolate factory converted to shops, restaurants, galleries, cinemas and offices.

Most of her choices are less widely known and reflect the diversity and crea-

tivity that has characterized adaptive-reuse efforts. Among my favorites are a Ballwin, Missouri, dairy barn converted to a shopping center; a New York City slaughterhouse now an artist's studio; a Tacoma bank turned museum.

In her introduction to the case studies, the author observes that adaptive reuse is "a significant social phenomenon in its own right, one that reveals a great deal about our country and about our attitudes toward our resources and ourselves." Adaptive reuse is an outgrowth of several trends, including a reaction to large-scale urban renewal, activist interest in historic preservation, the energy crisis and the dampening impact of a troubled economy on new construction.

The author also aptly points out that investments which bring middle-income consumers back to the city often displace the low-income residents who have been living there. And, while recycling can be a cost-effective way of making use of existing buildings, it is sometimes more expensive than constructing a new building from scratch.

The book lacks a rigorous evaluation of the projects themselves. Her treatment of the examples lacks sufficient information on the development process, financing, the role of government and the private sector, and the impact of the projects on their surroundings.

Nevertheless, the total picture that emerges is impressive. Adaptive reuse represents a turning away from the destructive, grandiose projects that have ripped apart much of the urban fabric. Neighborhood-oriented preservation projects are now recognized in both federal law and local codes as desirable activities. Perhaps most significant, adaptive reuse is indicative of a growing partnership between public and private interests in urban development.

Adaptive reuse is positive proof that the preservation movement has come into its own. The majority of architectural firms now handle some conversion work, according to the author, and her 95 examples by no means exhaust the list of adaptive-reuse projects. Perhaps the best proof of all is this study itself—a book written in a popular tone for a large audience on a subject that until recently only design professionals and preservationists cared to read about.

—Jane A. Silverman

Free-lance writer and urban planner

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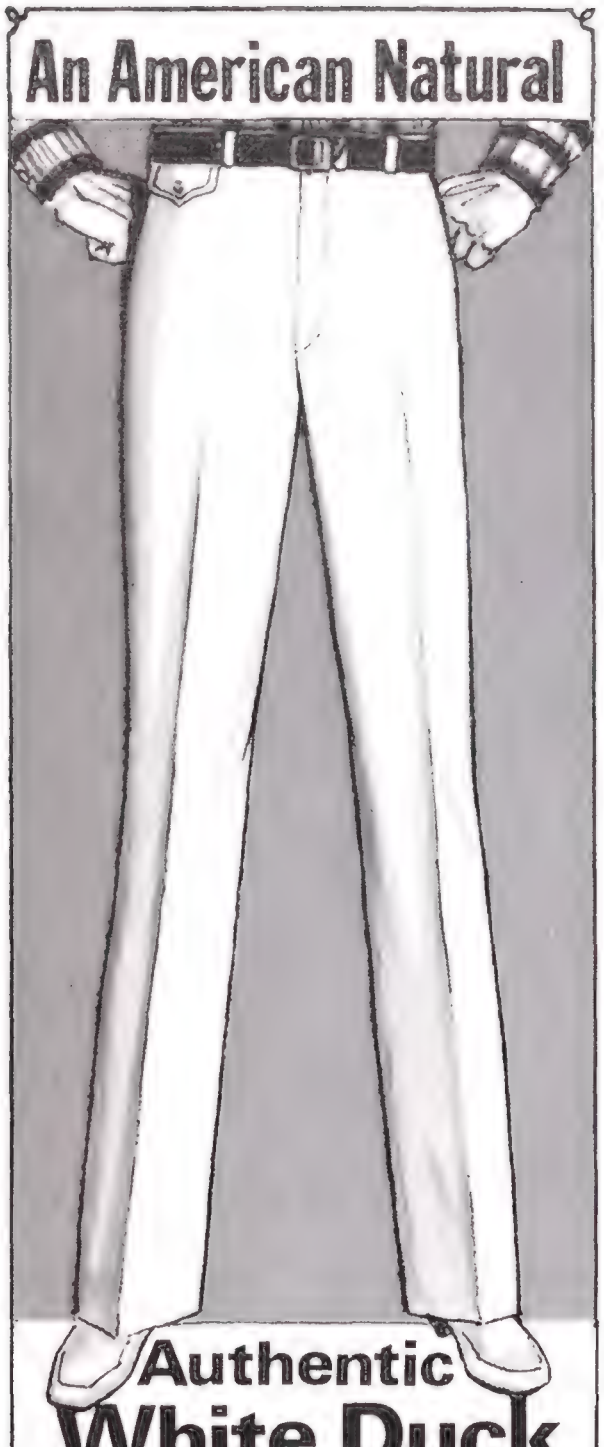

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The grandfather Ellen Smith remembers from childhood was hardly the sort of fellow to drop his job on a whim and take off across the country with no maps or even a compass. He was a quiet, dour character, a stubborn, proud, hardworking type. "There was no fun, no imagination, no adventure in him," she thought.

Grandfather was 29 at the time, a butcher at Fred Becker's Central Market in Oakland, California, and, like many of his contemporaries, an ardent cycling enthusiast. He doesn't say why he chose such a difficult and unusual route—Oakland to Portland, Oregon, and then east across the country.

The first couple of days out were so grueling—90-degree heat and eight inches of dust on the road—that a lesser man would have turned back. Indeed, Grandfather's traveling companion (a fellow member of the Acme Cycling Club) did just that. Undaunted, Grandfather pressed on alone, in one day riding 100 miles through the Sacramento Valley.

You have to keep in mind what Grandfather was riding. On top of 25 pounds of frame and tires were strapped some 30 pounds of equipment—no sleek, modern racing bike, the Stearns Model A Yellow Fellow! But Grandfather wasn't a man to be weighted down by such amenities as brakes, preferring instead to back-pedal, or, on very steep hills, to brake the ride by tieing lengths of brush together and dragging them through the dust. (It didn't always work. In Oregon, flying uncontrollably over some railroad tracks, he missed—you could say, was missed by—a high-speed express train by seconds.)

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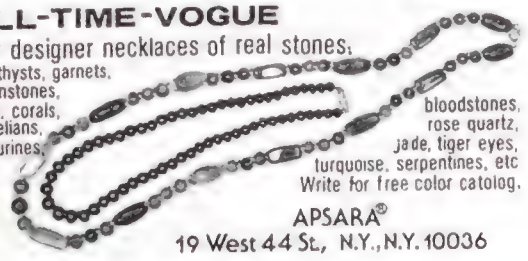

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Loher with his wheel at journey's end.

Nor, it seems, was the Yellow Fellow built for what it would have to endure to get across 4,354 miles of mountain ranges, deserts and terrible wagon roads, for it broke down countless times, often forcing Grandfather to carry it to the nearest town—once 20 miles away. And it didn't help that many people along the way were less than hospitable, resenting the "wheel" as a threat to horses and the sales of carriages. One farmer, asked for directions, replied, "Go to hell and find out."

No wonder Grandfather sometimes got discouraged. By the time he reached western Montana he was writing, "I only wished I had never seen a bicycle." But throughout it all he kept his eye firmly on the passing scene, and his comments and opinions are sometimes cranky, often wry, but always uniquely his. In Oregon, on seeing the numbers of children, he wondered "if the government was making special inducements for their increase." He found the citizens of Missoula, Montana, to be "the most selfish and unfriendly lot of people I ever met."

He rode along the towpath of the Erie Canal, which "did not seem to meet with the approval of the canalboat drivers, as I was continually scaring their mules. I expected to be thrown headlong into the canal every time I passed one."

Ellen Smith's introduction ends with "Thanks, Grandfather, for taking us on this wonderful ride through an America we'll never know." I can only give that an enthusiastic second.

—Elizabeth L. Newhouse
Washington writer and editor

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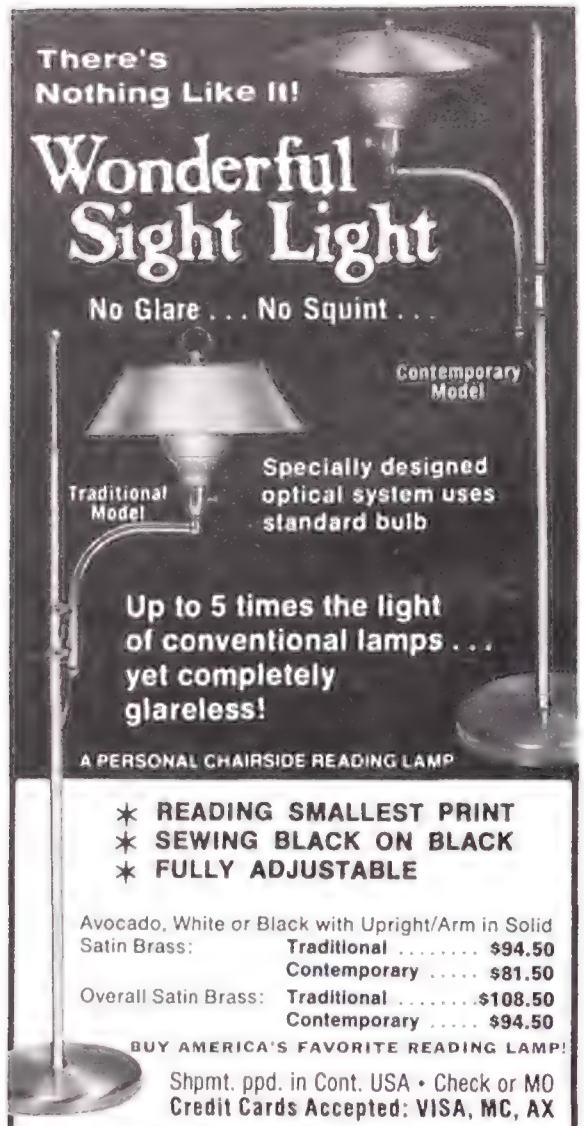

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Additional reading

Roses (p. 44)

The Rose-Lover's Guide by Roland A. Browne, Atheneum, 1974

Modern Roses, 7, the American Rose Society and the McFarland Co., 1969

For Love of a Rose by Antonia Ridge, Faber and Faber (London), 1965

The Story of the Rose by James McIntyre, Ward Lock Ltd. (London), 1970

A Rose Odyssey by J. H. Nicolas, Doubleday, Doran, 1937

Buddhist caves at Yün-kang (p. 54)

Yün-kang by Seiichi Mizuno and Toshio Nagahiro, Jimbunkagaku Kenkyusho (Kyoto), 1951

"The Present State of the Yün-kang Caves" by Yukio Yashiro, *Bulletin of Eastern Art,* March 1941

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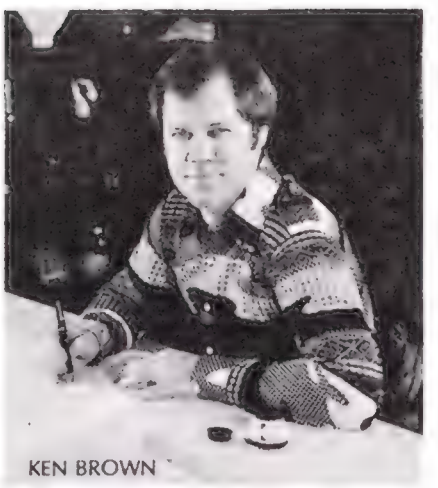
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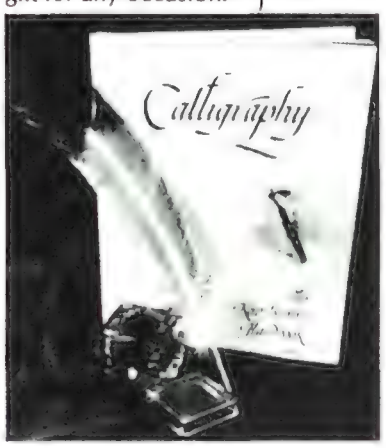

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Charles H. Elam, the Detroit Institute of Arts, 1967

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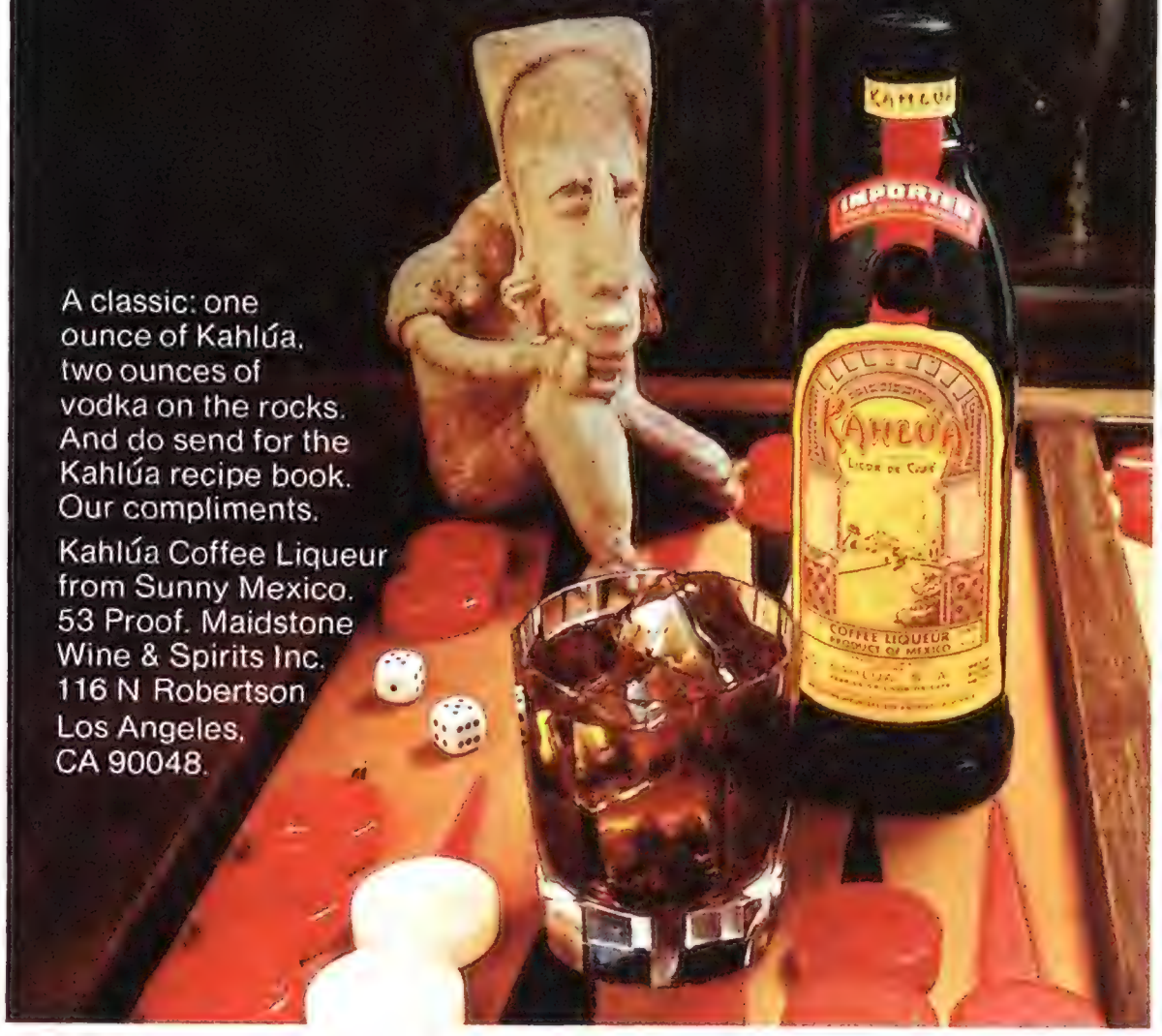

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Smithsonian highlights

Since the Smithsonian's bicentennial celebration, which included the grand opening of the National Air and Space Museum, nearly four million people have seen the museum's feature film *To Fly*.

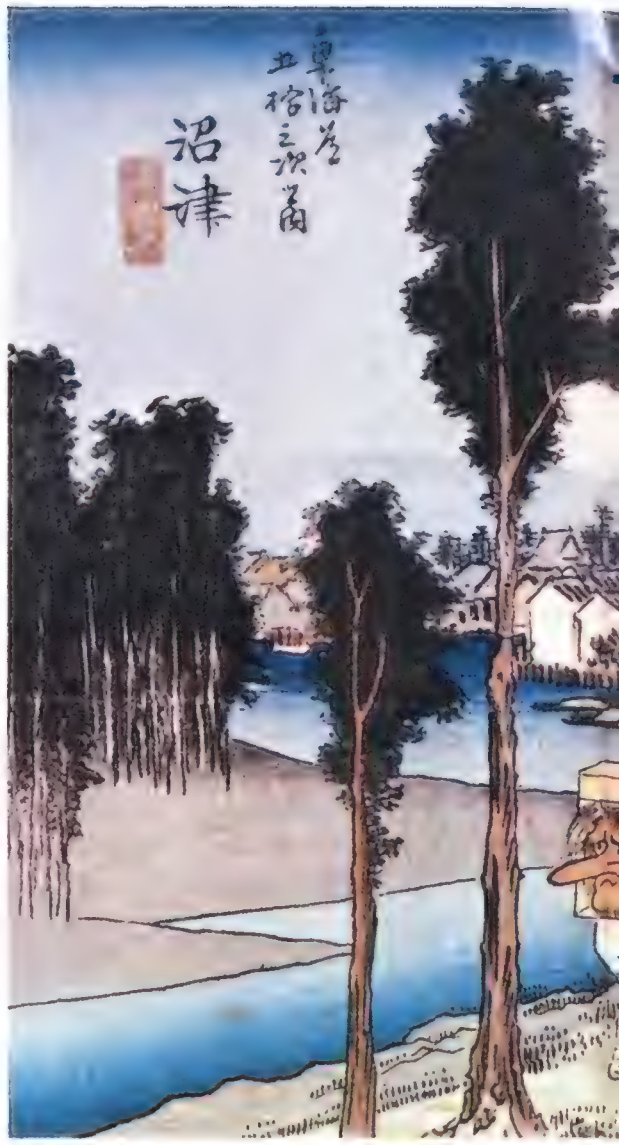
This month, on April 5, *To Fly* will be replaced on the NASM theater's seven-story-wide, five-story-high screen by a brand-new film spectacular called *Living Planet*.

Created by the same Academy Award-winning producer, Francis Thompson, *Living Planet* carries viewers, often in a flight position, to many of the Earth's remote corners. "I don't think I've ever seen so much spectacular scenery in one place before," says Melvin B. Zisfein, the museum's deputy director, adding that his favorite shot shows a glacier collapsing into the sea.

"While *To Fly* is a celebration of flight, its successor," Mr. Zisfein observes, "strikes off in another direction to go by air to diverse spots on the Earth, to develop a profound feeling for the loveliness of our planet—and also for its fragility."

Encircling the Air and Space Museum, incidentally, is a group of weeping cherries which should blossom sometime within the next few weeks, a fitting curtain raiser to a spate of Smithsonian exhibits and events centering on the "Japan Today" international symposium being held this month in half a dozen cities, Washington and New York among them.

On display at the Freer Gallery of Art are some 60 Japanese lacquer objects—writing and storage boxes, seal cases, in-



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cense containers, and so on—all from the museum's permanent collection and spanning 11 centuries. The exhibit is planned so visitors, through the use of mirrors and specially designed stands, can see as many of the intricately, delicately decorated surfaces as possible.

At the Cooper-Hewitt Museum in New York are two more Japanese exhibitions. One is comprised of rare objects—woodblock prints, sword guards and stencils for textiles—also from the museum's permanent holdings. The other explores the ancient Japanese concept of *MA*—time and space as a single inseparable entity basic to all the arts. To illustrate different aspects of *MA*, the show includes a Noh stage, a half-scale replica of a teahouse, a sacred space, a photographic essay on the Japanese house, and more lovely woodblock prints (left).

Smithsonian museums

Anacostia Neighborhood Museum
"Out of Africa: From West African Kingdoms to Colonialization" (through 1979)—A recounting of slavery's grim history.

Arts and Industries Building
"Discover Puppets!"—Roman Paska (April 4-8; April 18-May 13), pratfall-filled puppet farces. Box office number is (202) 381-5395.

Cooper-Hewitt Museum (New York)
"MA, the Japanese Concept of Time and Space" (April 3-May 27).
"Japanese Collections from the Cooper-Hewitt Museum" (April 10-May 20).

Freer Gallery of Art
"Japanese Lacquer" (April 17-October 15)—exhibition. Guest lecture on the exhibition by Ann Yonemura, of the Freer Gallery, is on April 26, 8:30 P.M.

Hirshhorn Museum & Sculpture Garden
"Alexander Calder's Universe" (through May 13).
"David Hockney: Travels with Pen, Pencil and Ink" (through June 10).

Museum of History and Technology
"Nineteenth-Century American Carpeting" (opens April 2 for a year)—50 examples of carpeting manufactured in the United States during the last century.

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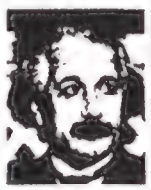

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Museum of Natural History
"Alaska's Native People" (through May 20)—On-location, anthropological images, in oil, by artist Lunda Hoyle Gill (below). "Life on Earth—The Primates" (April 16, 5:45 P.M.)—BBC producer John Sparks takes behind-the-scenes look at production of new fall TV series. Museum's Baird Auditorium.

Portrait of Carmen, an Alaskan Tlingit Indian, by artist Lunda Hoyle Gill.

National Collection of Fine Arts
"High School Graphics VI" (April 27-June 10)—This juried print exhibition highlights high school artists in public, private and parochial schools in the Washington, D.C., metropolitan area.

National Portrait Gallery
"Return to Albion: Americans in England 1760-1940" (April 20-September 16)—Paintings, prints, photographs and memorabilia revolving around 37 famous Americans (*e.g.*, Jennie Jerome Churchill) who left an indelible mark on England.

Renwick Gallery
"Buildings Reborn: New Uses, Old Places" (April 6-August 19)—Photographs and models document recycling of 53 old buildings—among them this stately gallery, the Smithsonian's Fine Arts-Portrait Gallery Building, Boston's Faneuil Hall Market and San Francisco's Ghirardelli Square (p. 142).
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smith" (April 6-August 19)—On view are 160 works of gold and silver jewelry and hollow ware.

Extended spring-summer hours

As of April 1 most Smithsonian museums are open from 10 A.M. to 9 P.M., with exception of the Freer, Renwick, Portrait Gallery and National Collection, which are open from 10 A.M. to 5:30 P.M. National Zoo buildings are open from 9 A.M. to 6:30 P.M.; the grounds from 6 A.M. to 8 P.M. Anacostia Neighborhood Museum is open weekdays from 10 A.M. to 6 P.M.; weekends from 1 P.M. to 6 P.M.

Smithsonian National Associates Regional Events Program

Hartford and New Orleans are the host cities for this spring's regional events program, organized in 1975 to benefit the large majority of Associates who live well beyond the Washington, D.C., metropolitan area. The Hartford program (April 16-25) features performances of baroque and classical music by the Smithsonian Chamber Players; a film lecture by Smithsonian photographer-filmmaker Kjell Sandved; concerts of 19th-century maritime music; and a seminar on Victorian gardening with Smithsonian horticulturist James Buckler.

Highlighting the New Orleans event (April 27-May 5) is a special exhibition of jeweled masterpieces from the Smithsonian's National Gem Collection, genealogy workshops and a lecture on Presidential portraits by Marc Pachter, National Portrait Gallery historian. National Associates in Hartford and New Orleans receive invitational brochures. For further information on the regional events program call (202) 381-6491.

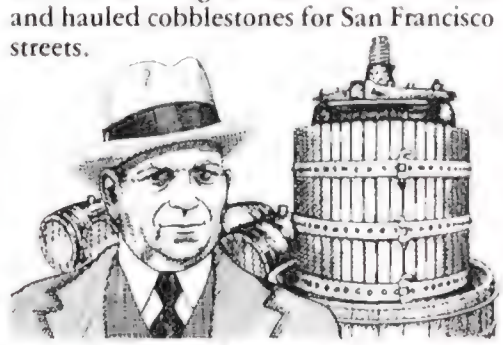
Smithsonian Division of Performing Arts (202-381-5395)

- "Romantic Chamber Ensemble" (April 8, 8 P.M.)—Music of von Weber, Spohr, Bruch, Schubert and Brahms. Baird.
- "An Evening of Haydn" (April 9, 8:30 P.M.)—The Smithsonian's James Weaver performs on three 18th-century keyboard instruments in Museum of History and Technology's Hall of Musical Instruments.
- "Music from Marlboro" (April 14, 5:30 P.M.)—Final concert of the session. Baird.
- "Girl Crazy" (April 21 and 22, 8 P.M.)

Samuele

2 Winemaking began in our family with my grandfather Samuele Sebastiani. Inspired by his father's love of good wine, he learned his art as a boy from the monks of a monastery near his home in Farnetta, near Lucca in Northern Italy.

In 1895, 21 year old Samuele left the vineyards of Italy and came to the United States, settling here in Northern California. He worked many years with the dream of owning his own winery. First as a laborer in the vegetable fields of Colma, south of San Francisco, where he earned the money to buy a wagon and a team of horses. Then to the quarries of Schocken Hill, overlooking Sonoma, where he cut and hauled cobblestones for San Francisco streets.



By 1904, enough was saved to purchase the original vineyard of the Mission de Sonoma, established in 1825, and the stone cellars that once housed the wines of General M. G. Vallejo. Samuele Sebastiani had his winery.

Married that same year, he and my grandmother Elvira began working together to build the family enterprise. She took in washing to help meet expenses while her husband made his deliveries, filling the barrels of local merchants from a small vat on the back of his wagon. His reputation as a creator of fine wines was beginning.

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• "Music for Two Violins and Harpsichord" (April 23, 8:30 P.M.)—Violinists Sonya Monosoff and Carol Lieberman with Mark Kroll, harpsichordist, perform a concert of High Baroque. Hall of Musical Instruments.

• "Esther" (April 29, 3 P.M.)—American premiere of Handel's first English oratorio, with the Smithsonian Chamber Players and the University of Maryland chorus. Baird Auditorium.

• "The Osborne Brothers" (April 29, 8 P.M.)—Hard-driving harmony (*Ruby* and *Rocky Top*) makes this group a perennial on the bluegrass circuit. Baird.

Musical Weekend in May

The eighth annual Musical Weekend, sponsored by the Smithsonian's Division of Musical Instruments and the Friends of Music, is scheduled for May 4, 5 and 6. Hotel accommodations for two nights and all meals are included. For further details see last month's SMITHSONIAN, or write to Musical Weekend, Room 4123, Museum of History and Technology, Washington 20560.

Membership benefits when visiting the Smithsonian

• The Associates' Reception Desk, in the castle, is open from 10 A.M. to 4 P.M. daily for registration, event-exhibit information and a special orientation publication.

• The Associates' Lounge, a quiet place to relax in the castle, is open from 10 A.M. to 5:30 P.M. daily.

• The Members' Dining Room, "The Court," in the Museum of Natural History, is open Monday through Friday—as of April 2—for breakfast (8:30-10 A.M.), for lunch (11 A.M.-3 P.M.) and for dinner (4:30-7 P.M.) and on weekends for breakfast (8:30-11 A.M.), for brunch (11 A.M.-3 P.M.) and for dinner (4:30-7 P.M.).

• Museum shops, discounts on purchases. For pre-visit information packet, send a postcard or phone the Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-381-6264). Allow two weeks for receipt.

Radio Smithsonian

This music-and-conversation program is broadcast weekly on approximately 50 stations across the country. For times (the program differs in Washington, D.C.) consult local public radio stations:

• "Forty Years in the Editor's Chair" (week of April 1)—Recently retired *Saturday Review* editor, Norman Cousins (now adjunct professor, UCLA medical school) talks about his globe-trotting career.

• "Diving in the Galápagos" (week of April 1)—A husband-wife team of Smithsonian biologists describe their research off islands made famous by Darwin.

• "An Evening of Duets" (week of April 8)—Music by Mozart, Schubert and Brahms sung by Jan DeGaetani and Leslie Guinn, with Gilbert Kalish at the 1882 Paderewski Steinway Grand.

• "A Man of Two Cultures" (week of April 15)—The eminent Lord Snow surveys gap between the arts and the sciences.

• "The Eye of Eisenstaedt" (week of April 15)—A talk with Alfred Eisenstaedt, the *Life* photographer who has often been called "father of photojournalism."

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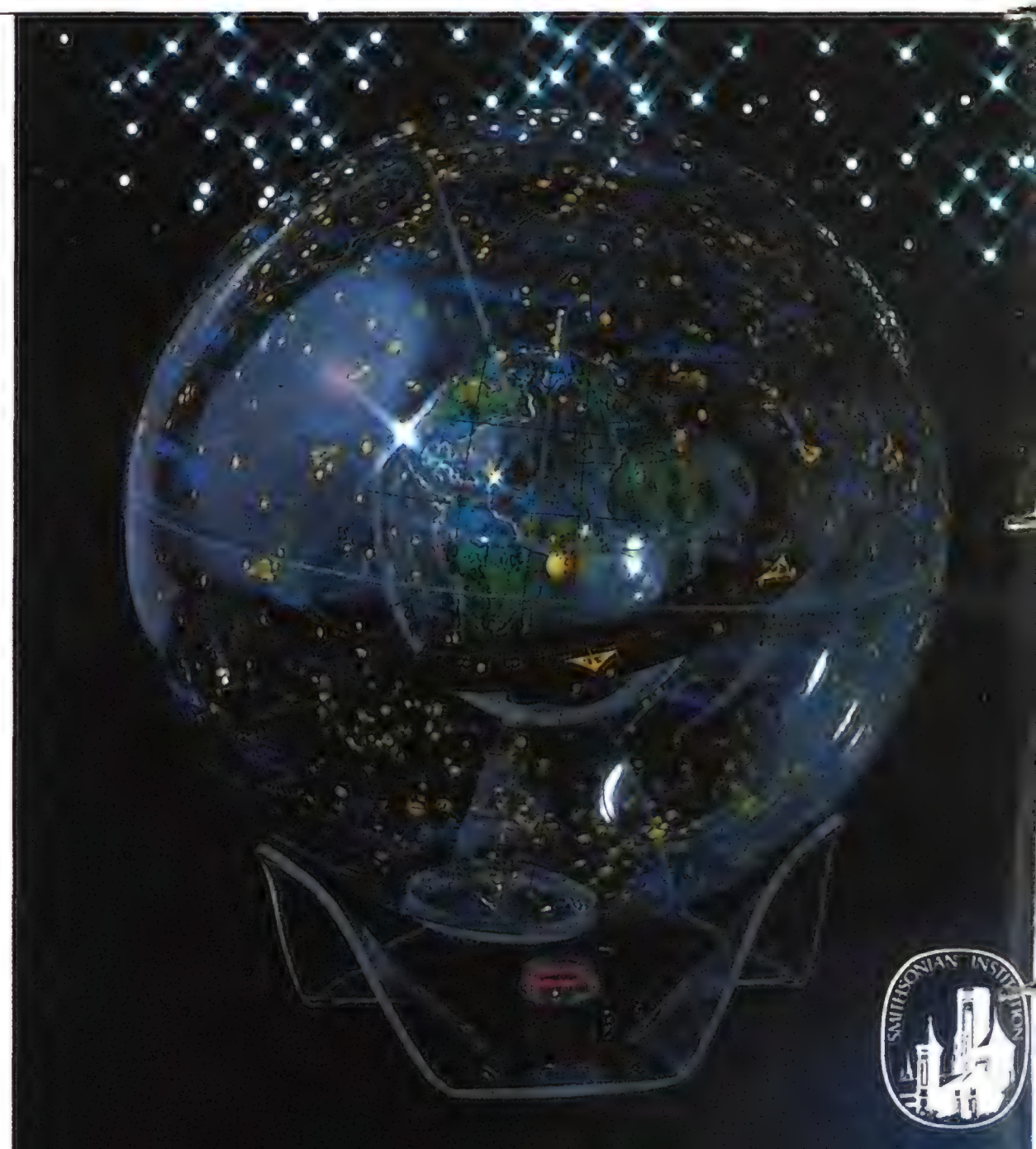


• "The Time of Our Lives" (week of April 22)— A look at (and behind) some of *Time*'s best magazine covers, with Marc Pachter, Portrait Gallery historian.
• "Everyone Can Fly [Almost]" (week of April 22)—A visit to National Air and Space Museum's new General Aviation Gallery, where you can get a start on learning to fly in flight simulators.
• "Oh, Kay!" (week of April 29)—Gertrude Lawrence and original cast perform 1926 Gershwin musical in a new Smithsonian recording; host is Smithsonian jazz authority Martin Williams.

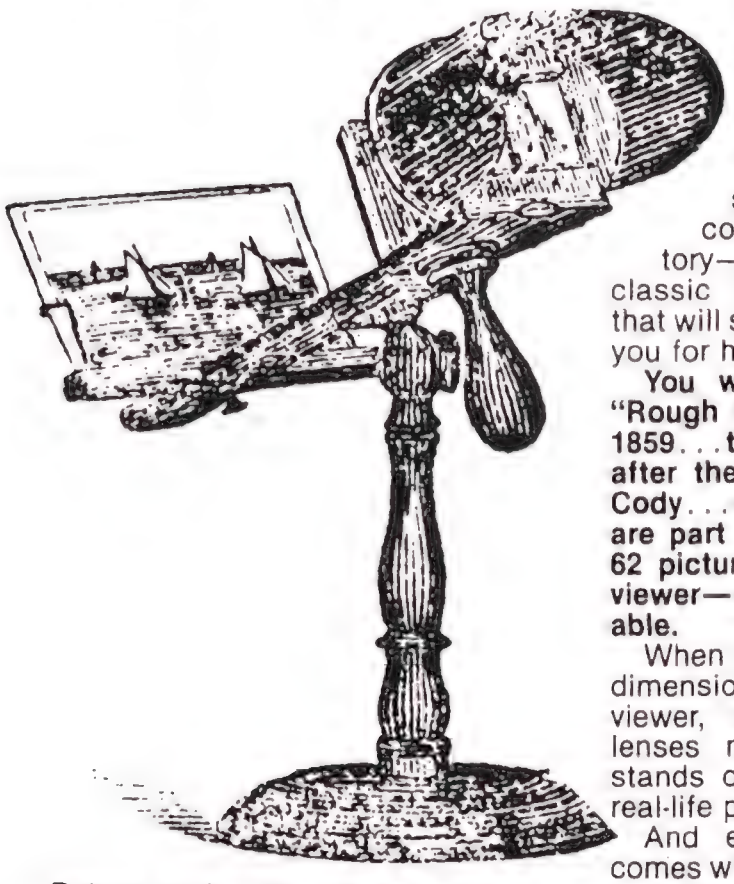
Smithsonian Galaxy

These brand-new, 2½-minute, twice-a-week features probing the worlds of natural science, the arts, history and air-and-space exploration are now available, free of charge, to radio stations across the nation. If interested in hearing them in your community, notify your local radio station. For further information write this program care of Office of Telecommunications, Arts and Industries Building, Room 2472, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington, D.C. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some April openings:
• Anchorage, (April 7-May 6)—"Twenty-Two Polish Textile Artists," Anchorage Historical and Fine Arts Museum.
• Bridgeport, Connecticut (April 7-May 6)—"And Now a Message: A Century of Advertising, 1830-1930," Museum of Art, Science and Industry.
• Miami, Florida (April 7-May 6)—"The Seat of American Invention," Miami Dade Public Library.
• Chicago (April 7-June 10)—"Hungarian Art Nouveau," Art Institute of Chicago.
• Louisville (through April 22)—"African Artists in America," Art Museum.
• Shreveport (through May 13)—"The First 4,000 Years," Meadows Museum.
• Detroit (April 14-May 13)—"Polish Posters," the Detroit Institute of the Arts.
• Lincoln, Nebraska (April 14-May 13)—"Embroideries by Children of Chijnaya," University of Nebraska.
• Trenton, New Jersey (April 14-May 13)—"Black Women: Achievements Against the Odds," Trenton State College.
• Cleveland (April 7-May 6)—"Birds of Prey: Paintings by Louis Agassiz Fuertes," Cleveland Museum of Natural History.
• Ephraim, Utah (April 7-May 6)—"The Arts of Latin America," Snow College.
• Vermillion, South Dakota (April 7-May 6)—"The Great West, Real/Ideal," University of South Dakota, the W.H. Over Museum.
• Odessa, Texas (April 14-May 13)—"Blacks in the Westward Movement," University of Texas of the Permian Basin.
• Charleston, West Virginia (April 7-May 6)—"Rails of the World," Sunrise Center.
• Chapultepec, Mexico (through May 25)—"The Human Form: Sculpture, Prints and Drawings by Fritz Wotruba," Museo de Arte Moderno.
• Edmonton, Alberta (April 7-May 20)—"Korean Village in Transition," Provincial Museum of Alberta.

THE GRAND OLD-FASHIONED THREE-DIMENSIONAL TIME MACHINE...



Return to the days of the wind-up Victrola, horse-drawn carriages—and the amazing Holmes stereoscope.

The Holmes Stereoscope is a precision reproduction made of solid wood and finished with a rich walnut stain. All fittings are solid brass and the brass visor is trimmed with black velvet.

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Join with other Smithsonian Associates

Travel and Study, at Home, Abroad . . . and

For both the seasoned and would-be traveler, the Smithsonian has developed a travel program to meet a variety of tastes and budgets. In order to accommodate the increasing growth and interests of Smithsonian Associates, the tour programs have expanded, bringing travelers to places reflecting the Institution's interests.

Domestic Study Tours

History of the Federal City—May 16-20: Trace origins and development of nation's capital with visits to historic houses and districts, plus behind-the-scenes tour of Congress in session.

Shenandoah—June 1-10: Study the geology, archaeology and botany of these beautiful Virginia mountains.

Magnificent Tetons—June 1-11: Hikes, field trips through the national park in cooperation with Teton Science School.

Connecticut Antiques—June 17-24: Visit museums, special collections, historic houses, private homes and noted dealers.

Family Folk School—July 1-7: A creative, family-oriented week of crafts, dancing, music at J. C. Campbell Folk School in the mountains of western North Carolina.

Montreal/Quebec—July 7-15: Lectures, museum visits and walking tours trace the development of French culture in North America.

Desolation and Gray Canyons—July 22-August 1, September 30-October 10, or October 11-21: A white-water trip for the adventurous; explore the geology, wildlife, and Indian and outlaw history of Utah's Green River.

Collegiate Peaks of Colorado—July 28-August 5: Base camp nestled in alpine basin near Continental Divide provides ideal setting for environmental education.

Alaska—July 29-August 7: The serenity and natural wonders of Mt. McKinley National Park at Camp Denali, a wilderness retreat.

Grand Canyon—August 17-27 or August 24-September 3: An exciting raft trip through the Grand Canyon with emphasis on ecology and natural history.

Nova Scotia—September 1-10: Trace the rich history and varied cultures of this ruggedly beautiful Maritime Province.

Pinewoods—September 4-9: British and American folk dancing and singing at rustic camp near Cape Cod.

Bryce and Zion—September 13-21: Study the geology and natural history of Utah's spectacular national parks.

Toronto—September 18-24: Experience the exciting diversity of this city's art and architecture through museum lectures and walking tours. Visit Stratford Shakespeare Festival and Niagara Falls.

Washington "Anytime" Weekend: Choose any weekend to visit original Smithsonian building, spend two nights at Loew's L'Enfant Plaza or Hyatt Regency Washington hotels, each close to the Mall, and see other sights in city by Tourmobile. Reservations and payments must be received at least ten days prior to arrival.

Foreign Study Tours

Greek Islands Cruise—April 22-May 5: Cruise on our own ship M/V *Neptune* to Aegean Islands and ancient sites in the Peloponnesus; leadership and archaeological lectures by Dr. Richard H. Howland, special assistant to the Secretary of the Smithsonian, John Jermain Slocum and Jerome Sperling; wild flower talks by John Morgan Bevan Jr.; four days in Athens.

Copenhagen to Lisbon—August 17-September 3: Cruise on MTS *Argonaut;* transit the Kiel and North Sea canals; sail up the Seine, Loire, Gironde rivers, with special visits to northern Spain and Portugal.

Foreign Charter Tours

The Bavaria of Ludwig II—April 8-23: Discover the splendor of Bavarian decorative arts and history with visits to special collections, architectural monuments, palaces, gardens and parks. Meet in New York for special orientation program; spend first week in Munich; travel second week through the Bavarian Alps and up the "Romantic Road" of Gothic towns.

The Wild Highlands of Scotland—May 3-19: In cooperation with Aigas Field Centre, based in Victorian castle, explore magical scenery of central Highland glens. Evening lectures provide background for special hikes and field study of wildlife.

Paris and the French Countryside*—May 14-28: Museum lectures, walking tour of the islands of the Seine and excursions to Chartres and Malmaison plus a choice of a week-long travel seminar to Burgundy, Provence, or Normandy and Brittany.

Russia*—May 20-June 3: Leningrad, Tallinn and Moscow; see the Hermitage and Tretyakov Museums, the palaces of Pushkin or Petrodvorets, the ancient Kremlin with its old churches and Armory Museum.

Trans-Siberian Express—May 27-June 19: Fly from Seattle to Tokyo for tour on steamer to Nahodka; train to Khabarovsk, Irkutsk and Lake Baikal. Choice of four seminars: Samarkand, Bukhara and Tashkent; the cities of Old Russia; Outer Mongolia and the Gobi Desert; or the full Trans-Siberian experience.

Midsummer Night*—June 19-July 5: Tour begins in Rovaniemi, Finland, on Arctic Circle, ends in Helsinki. Celebrate year's longest day, travel through Lapland to mountains, fjords of northern Norway, go by coastal steamer to North Cape.

Scotland*—September 9-23: Edinburgh and beyond—a program of walking tours and special visits to castles, abbeys, battlefields and archaeological sites.

Oxford/Smithsonian Seminar—September 14-29: Select from unique curriculum taught by Oxford University faculty and live in Worcester College. Lectures, field trips and special seminars utilize rich resources of the town and university.

People's Republic of China—September 22-October 11: Depart San Francisco to Peking via Tokyo (the party of 25 will also visit Sian, Loyang, Wusih and Shanghai). Due to anticipated demand, Associates will be selected by lottery based on receipt of deposit and official application form received prior to April 30.

Sultans' Treasures*—September 23-October 7: An adventure tour to Istanbul and Asiatic Turkey and a cruise on the Bosporus. Separate excursions to Aegean Turkey, or Anatolia and Cappadocia.

Spain*—September 30-October 14: Madrid and day excursions to Toledo or El Escorial. Week-long travel to the Basque country and Barcelona, Andalusia and Córdoba, or Santiago de Compostela.

Low-cost tours include first-class hotels, most meals, sightseeing, lectures, theater tickets, air fare. *Indicates optional predeparture course will be available.

Write Smithsonian Associates Travel for trip brochures: A&I 1278, Smithsonian, Washington, D.C. 20560 or call (202) 381-5635.

in Washington

Selected Studies Seminars

Make plans now to enjoy a popular new program with its wealth of outstanding speakers, unique museums and collections at the Smithsonian and elsewhere in the greater Washington, D.C., area. Choose from these opportunities combining lectures and field trips to get "behind-the-scenes":

The Arts of Japan—May 20-25: Architecture, painting, sculpture, and pottery from prehistoric times to the present with emphasis on the great philosophies, religions, and impact of other cultures. Includes films, tours of the renowned Freer Gallery of Art, and a tea ceremony at the Embassy of Japan.

Man's Quest for Wings—June 3-8: The wonders of aviation through the eyes of the eminent curators of the National Air and Space Museum. Includes tours and a day at Silver Hill (NASM's extensive preservation, restoration and storage facility) to view the world's finest collection of flight memorabilia.

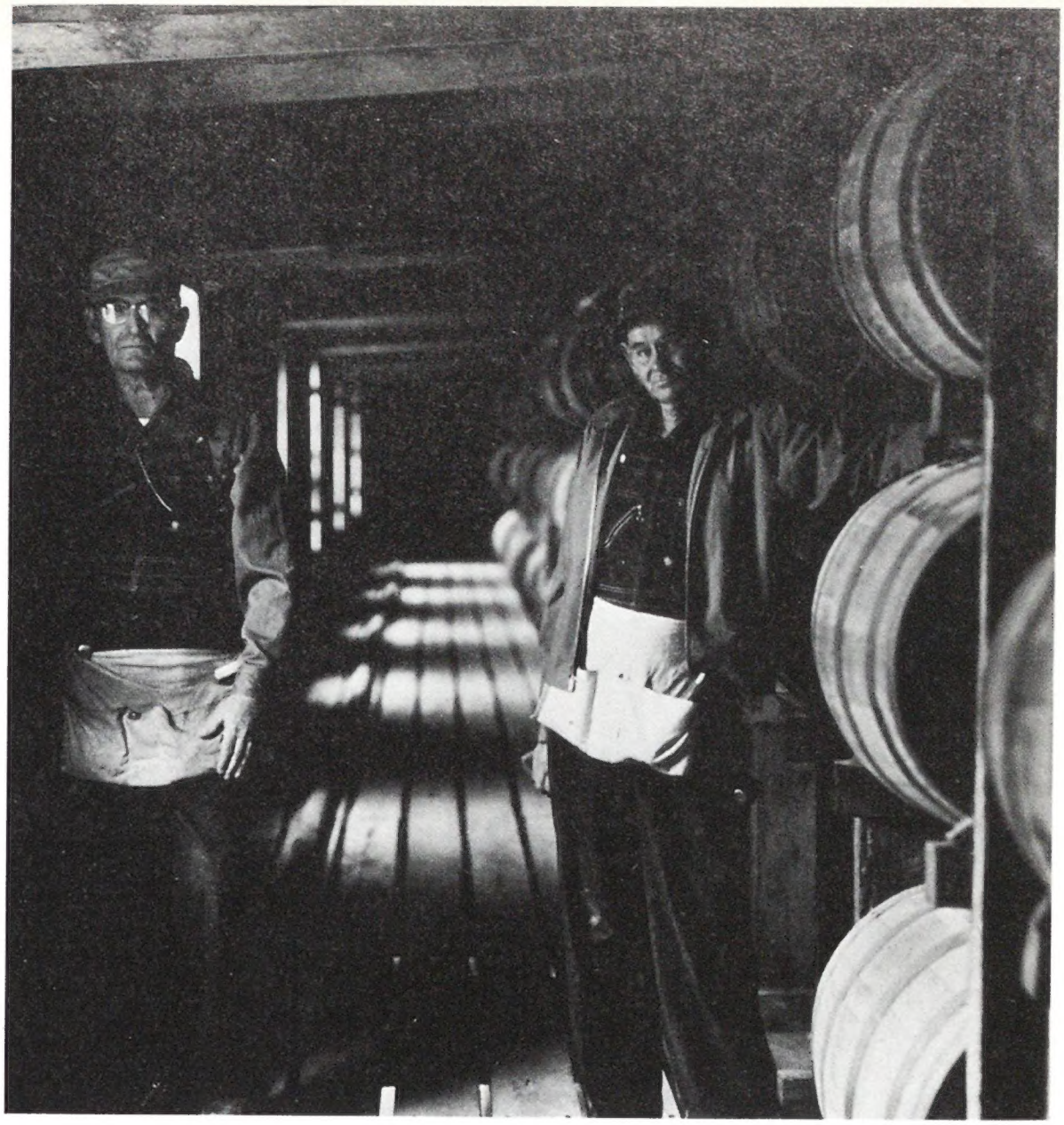
Historic House Preservation—June 3-8: Nationally known preservation experts share their special expertise in lectures and tours of famous Georgetown, Alexandria, and outstanding private and historic properties of the National Trust for Historic Preservation.

Genealogical Research—June 10-15: Taught by leading authorities, participants learn how to conduct research in major repositories such as the National Archives, Library of Congress, and DAR Library.

China: A Cultural History—June 10-15: Prehistoric China to the enigmas of today, with emphasis on intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the outstanding collection of the Freer Gallery of Art.

Aircraft Restoration: How To—Sept. 9-13: Internationally known master craftsmen offer indepth workshops on the wide variety of techniques used at the National Air and Space Museum.

Please send requests for full information on content, accommodations and fees by seminar title to: Selected Studies, A & I 1190A, Smithsonian Institution, Washington, D.C. 20560 or telephone (202) 381-6434 for details.



THESE MEN can tell exactly what's happening inside every barrel in a Jack Daniel's warehouse.

In the heat of summer the whiskey is expanding into the charred inner wood of the barrel. Come Halloween, it's starting to cool. And inching its way back toward the center. Over the aging period, this gentle circulation of whiskey is going on constantly. Of course, it can't be perceived by the human eye. But after a sip of Jack Daniel's, we believe you'll recognize its importance.

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DROP
BY DROP

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By Dixie Oliver

Confessions of a garage sale addict

I've just come home from a most satisfying shopping spree. I came in triumph, laden with unnecessary, unneeded and probably unworkable knickknacks.

Just look at what I bought! A dandy posthole digger, eminently suitable in case I ever need to install a chain-link fence inside my town house. A pair of left-handed scissors for my right-handed family. A suit of thermal underwear (the Houston climate is best suited for growing orchids, pineapples and Spanish moss, but never mind, since the underwear is too large for anyone but Santa Claus). An infant's hot-water bottle (we're all grown-up), and a potted plant that looks suspiciously like poison ivy. And, I almost forgot, a 50-pound-capacity pressure cooker. Well, what the heck, someday I might buy 50 pounds of something that needs to be cooked in a hurry.

What is it about a garage sale that makes me want everything in sight? Why do I find worn-out cowboy boots irresistible? What do I need with a World War II parachute? Why are old magazines more interesting than the new?

Raised as I was on a diet of Southern-fried homilies and preachments of the eternal verities, I seem to have developed antibodies against living by what I've always been taught. If you tell me "a penny saved is a penny earned," I am instantly smitten with an urge to buy somebody's coin collection. If you say "waste not, want not," I start craving somebody's cast-off gizmo, like, say, a defroster for my no-frost refrigerator, so I won't be in want. Advise me to "save for a rainy day" and I'll go out to find used umbrellas.

Never mind that my house and garage, like every house and garage, is already bulging with unneeded chattels. My old crank eggbeater became obsolete when Eli Whitney, or whoever it was, invented the Waring Blendor. But that won't stop me from snapping up somebody else's venerable beater or blender.

My husband accuses me of practically making a career of going to garage sales.

Wednesdays and Thursdays I set aside for sneak previews. Fridays through Sundays I retrace the route, rushing from one sale to the next, snapping up fantastic bargains in things I'll never have the slightest use for, except to stock a sale of my own. Happily, I am not alone in this wild and addictive routine.

My friend Agatha, for instance, recently bought a barely rusted cistern for only $2. Of course, her husband had to rent a small truck to carry it home and, at Agatha's insistence, had to fill it with expensive city water to see if it leaked. It did, of course, but no matter. Agatha is now the only person on our block with her very own cistern.

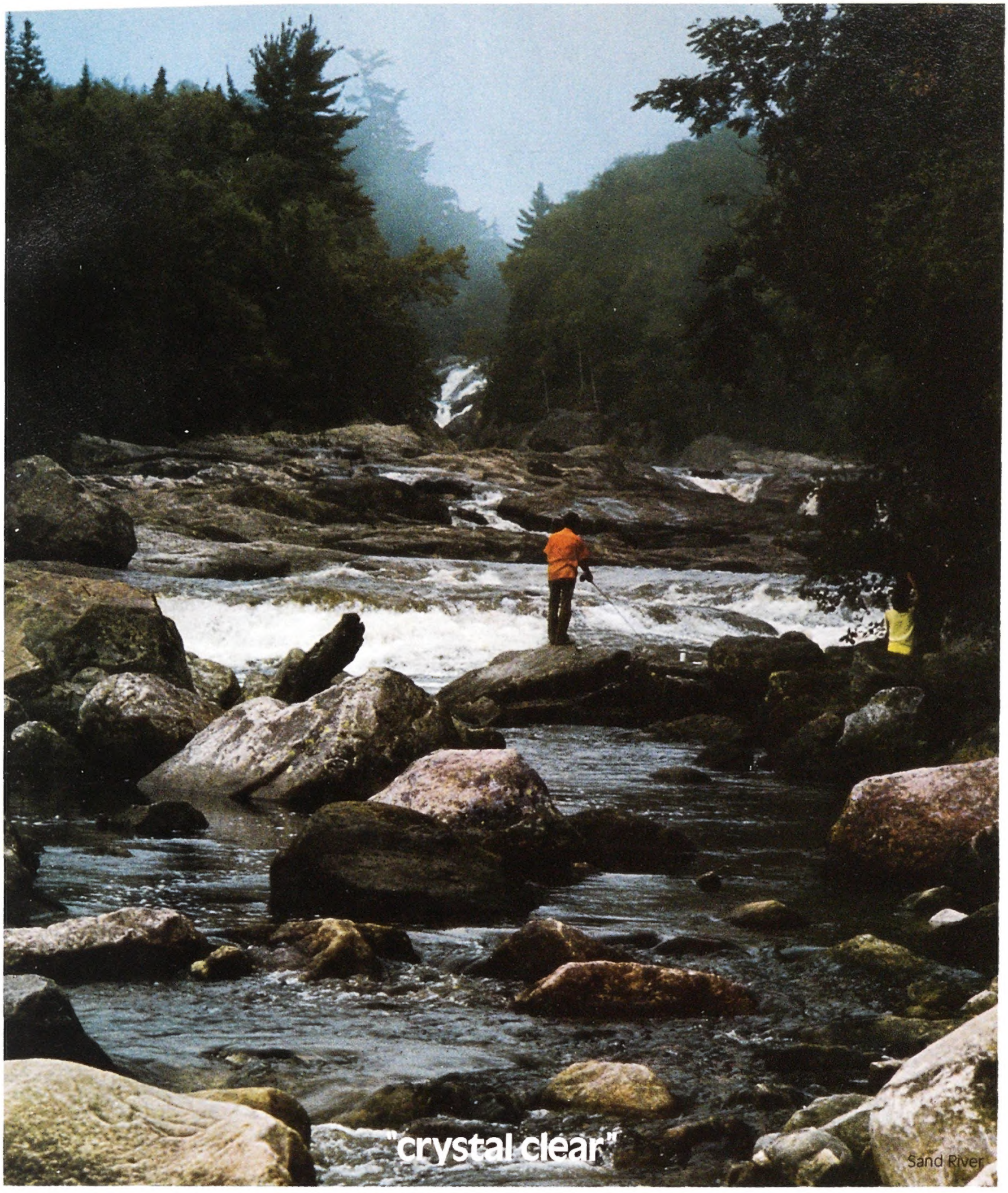
I know a doctor's wife who so dearly loves to hold garage sales that she goes to other garage sales just to maintain an inventory. She even had a special room built on the back of her house with its own outside door, just to display the merchandise. It enables her to sit in air-conditioned comfort all summer, sipping iced coffee, as neighbors and strangers paw through the stuff one wonders why she ever bought in the first place.

When you start making the rounds you get to know the regulars, as well as the floating merchandise. You see the same prospectors at sale after sale. And naturally you look forward to the day when they sell off all the goodies to you.

Some of the shoppers are terribly aggressive. I know one who took a liking to a seven-foot drapery traverse rod that I was offering for $1. She told me all the reasons why I should cut the price to 50 cents. As it happened, however, the rod belonged to a neighbor, so I said no dice. She went away angry. When the sale was over, the rod was still there. I gave my neighbor $1, took the thing into the backyard and broke it into little pieces. Made me feel good.

As in most other types of open-counter merchandising, shoplifting is a worrisome problem. I've crossed sales a few times with a mother-daughter combo who shop with tote bags into which I've seen them drop small items. Their specialty is confusion. They wander with stuff in their hands and take turns asking distracting questions. The daughter has flaming red hair worn in a large beehive. I'm sure she hides jewelry and maybe even small appliances in it.

Easy solution: a private, by-invitation garage sale. Shoplifters not welcome, but *you* are—unless your hair's in a beehive.



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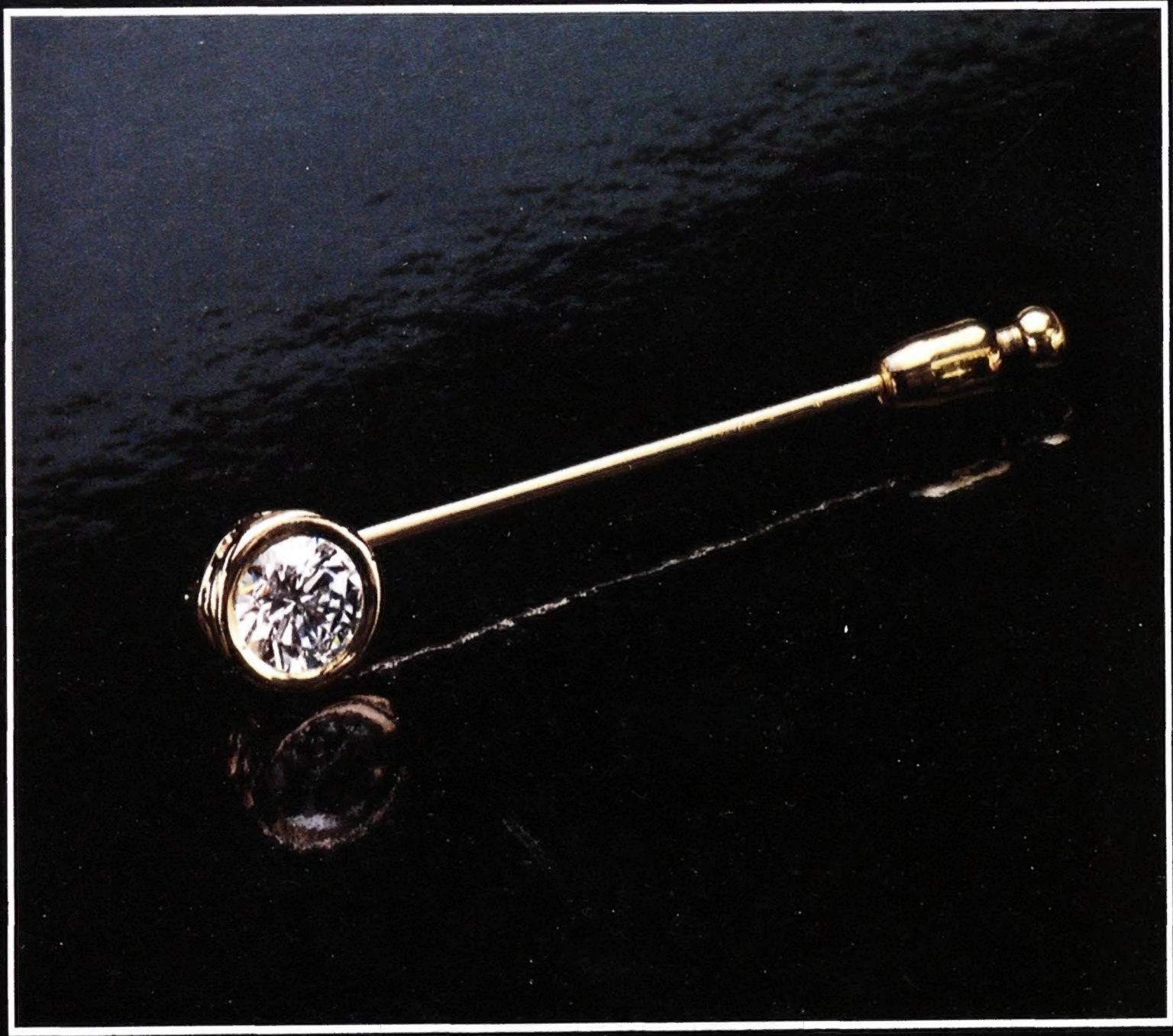

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To sparkle on its own. Of lasting value,
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The diamond solitaire.
It is the gift that makes a rare and beautiful
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A diamond is forever.

The 1⅛ carat diamond shown is enlarged for detail.
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